THE EFFECTIVENESS OF A RELAXATION TRAINING PROGRAM IN CONTROLLING THE INAPPROPRIATE BEHAVIORS OF EMOTIONALLY HANDICAPPED CHILDREN

By

Don Wells

A DISSERTATION PRESENTED TO THE GRADUATE COUNCIL
OF THE UNIVERSITY OF FLORIDA IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

1980

ACKNOWLEDGEMENTS

I would first like to express my deepest thanks to Dr. Cecil Mercer for his guidance and friendship throughout my educational experience at the University of Florida. I would especially like to thank him for the countless time he has spent with me in the preparation of this paper. His efforts were certainly above and beyond the call of duty. I wish also to thank Dr. Stephen Olejnik for his cooperation and helpful suggestions during this time.

Dr. Robert Algozzine and Dr. Rex Schmid have provided me a worthwhile and stimulating program of study as a student at the University of Florida. For this and the friendship they have shown me, I am greatly appreciative. In addition, I would like to express my appreciation to the other members of the Special Education Department faculty and my colleagues for their input into my educational experience.

Special thanks also go to Mr. Ralph S. Archibald, Mr. Ed Fordim, and Ms. Elaine Neismith, for their assistance and cooperation in the accumulation of data for this study. To these three I am greatly indebted.

Finally, I would like to thank family and friends for their moral support. Special thanks go to Cheryl; my parents, Dick and Nita; my brother, Rick; and my sister, Judy.

TABLE OF CONTENTS

CHAPTER III

CHAPTER IV

CHAPTER V

LIST OF TABLES

Table

LIST OF FIGURES

Figure

Abstract of Dissertation Presented to the Graduate Council of the University of Florida in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

THE EFFECTIVENESS OF A RELAXATION TRAINING PROGRAM IN CONTROLLING THE INAPPROPRIATE BEHAVIORS OF EMOTIONALLY HANDICAPPED CHILDREN

By

Don Wells

August, 1980

Chairman: Cecil D. Mercer
Major Department: Special Education

The effectiveness of a relaxation training program in controlling out-of-seat and off-task behaviors of three emotionally handicapped children was experimentally investigated. Two males, ages nine and ten, and one female, age nine, were the subjects of the study. All three subjects were enrolled and attended an elementary school resource room in the Florida public school system. The experimental design was a variation of the multiple baseline design, with blind conditions. This design allows an experimental analysis of the novelty phases as well as treatment and return to baseline phases of the experiment. Data were obtained by trained observers on duration of off-task and out-of-

seat behaviors as they occurred in the subjects' resource room class setting.

Results of comparisons made across the experimental phases indicated (a) a reduction of off-task behavior for all three subjects during the treatment phase, (b) a reduction of out-of-seat behavior for two subjects during the treatment phase, (c) the presence of selective novelty effects on the dependent measures, and (d) differential sensitivity of dependent measures to the treatment effects.

CHAPTER I

INTRODUCTION

In the State of Florida an emotionally handicapped child is one who exhibits persistent and consistent severe behavioral problems which disrupt the student's learning process. Common behavior problems which frequently interfere are overactivity, short attention span, low frustration tolerance, and aggressiveness. Due to these educationally debilitating problems specific techniques for altering these behaviors are important.

A variety of control techniques have been suggested to ameliorate the problem classroom behaviors of emotionally handicapped children. Included among these techniques are medication (Stroufe, 1975), behavior modification (Hallahan & Kauffman, 1976; Kubaney, Weiss, & Sloggett, 1971), structured environment (Haring & Whelan, 1965; Hewett, 1968), self-instruction (Goodwin & Mahoney, 1975), and modeling (Csapo, 1972; Kauffman, 1977). These techniques have been shown to be effective; however, frequently they require a great deal of teacher knowledge and/or participation to ensure their effectiveness.

In recent years a technique of relaxation training, originated by Edmund Jacobson (1938) in clinical settings, has been adapted for use in the classroom. Variations of Jacobson's technique have

been used with a variety of populations and behaviors (Braud, Lupin, & Braud, 1975). Two criticisms may be made of this body of relaxation training literature. First, imprecise criteria for selection of subjects have been used for experimentation (Braud et al., 1975). Second, all of the research found in educational literature has involved the use of variations of Jacobson's original relaxation training techniques. This is important in that these variations cited in the literature add elements to the basic relaxation curriculum (e.g., autosuggestion, cues, applied technique, and biofeedback). Thus it is exceedingly difficult to determine the specific effects of relaxation alone. Additionally, these variations require further competence of the instructor in specific areas such as the use of biofeedback and the use of appropriate cues and autosuggestion techniques.

Statement of Purpose

The study is designed to determine if the use of relaxation tapes (using Jacobson's technique only) is effective in reducing the inappropriate behaviors of emotionally handicapped children.

Definitions of Terms

Relaxation Training

Relaxation training refers to Jacobson relaxation techniques (1938, 1948), to be administered during daily relaxation training sessions lasting approximately 15 minutes each. The Jacobson

relaxation training (JRT) involves the systematic tightening and relaxing of the basic muscle groups, in an attempt to achieve an overall relaxed state (see Appendix A for elements of curriculum).

Emotionally Handicapped Children

In the State of Florida emotionally handicapped children are defined as children who, after receiving supportive educational assistance and counseling services available to all students, still exhibit persistent and consistent severe behavioral disabilities which consequently disrupt the student's own learning process. This is the student whose inability to achieve adequate academic progress or satisfactory interpersonal relationships cannot be attributed primarily to physical, sensory, or intellectual deficits.

Behavioral Disabilities

For purposes of this study, data were collected on behaviors that are representative of the following behavior problems: out-of-seat behavior and off-task behavior. These two specific behavior problems were selected because of their pragmatic benefits in the classroom situation. Teachers are seemingly often concerned that their students are in their seats and working on assigned material. This study was designed to determine if a relaxation training curriculum will decrease children's out-of-seat and off-task behaviors. The categories of low frustration tolerance and aggression have been eliminated due to their less frequent appearances. For the purposes of this study inappropriate behavior is defined as (1) exhibiting duration of off-task behavior less than 70 percent of the time during classroom observation periods and (2) exhibiting

duration of out-of-seat behavior more than 10 percent of the time during classroom observation periods. (Operational definitions of off-task behavior and out-of-seat behavior may be found in Chapter III.)

Questions Under Investigation

This study was designed to answer the following questions regarding the application of relaxation training tapes into the curriculum of emotionally handicapped children exhibiting inappropriate behaviors. Specifically, the following questions were addressed:

1. Does a brief relaxation training curriculum effect the duration of off-task behavior of emotionally handicapped children immediately following training sessions (Observation 1) and/or one-half hour following treatment (Observation 2)?

2. Does a brief relaxation training curriculum effect the duration of out-of-seat behavior of emotionally handicapped children immediately following training sessions (Observation 1) and/or one-half hour following treatment (Observation 2)?

3. To what extent are effects of relaxation training different for one, two, and three week training sessions?

4. Does a withdrawal of relaxation training produce changes in the behavior of emotionally handicapped children?

Limitations

The subjects of this study cannot be said to represent adequately all emotionally disturbed children displaying inappropriate behaviors. The subjects were selected from a restricted area (i.e., north-central Florida). The selection of subjects was further restricted to elementary school-aged children identified and placed in Florida's public school programs for the emotionally handicapped.

Summary

Variations of Jacobson's relaxation training curriculum have been used in a variety of settings with various populations. The specific technique alone, however, has not been used as a method to decrease inappropriate behaviors in classroom situations. Variations of this technique have been found to be effective in a variety of areas. This study was designed to determine if Jacobson's technique alone may be an effective means of treating the off-task and out-of-seat behaviors of emotionally disturbed children.

CHAPTER II

REVIEW OF RELATED LITERATURE

Although Jacobson first published a description of his technique over 40 years ago, it was not until the last decade that investigators began extensive research into its effectiveness with varying populations. Promising results have been noted in the literature with many populations and for the amelioration of many problem behaviors.

Three areas of literature directly related to this particular study are (1) a description of relaxation theory as it has been presented in the literature designed for a variety of populations, (2) the use of relaxation training (RT) in studies conducted in environments other than those within an actual school setting (clinical), and (3) the use of relaxation training in studies conducted within a school environment. As few empirical studies have been conducted using any form of relaxation training with the emotionally handicapped, this chapter will examine the relevant literature which indicates a need for an investigation into the effects of relaxation training on this population.

Relaxation Theory and Practice

Jacobson Relaxation

Progressive Relaxation Training (PRT) was introduced by Edmund Jacobson in his classic text Progressive Relaxation (1938). Jacobson described evidence supporting the effectiveness of this technique in coping with a variety of emotional and physical complaints such as anxiety, explosive temper, depression, general fatigue, insomnia, and headaches. However, since the introduction of progressive relaxation, many useful variations have been suggested in order to shorten and adapt for use with differing populations and problem behaviors (Bergland & Chal, 1972; Elitzur, 1976; Goldfried & Trier, 1974; Wolpe & Lazarus, 1966).

Jacobson's method of relaxation training stresses the importance of the ability to recognize muscular tenseness whenever it occurs, which is easily observable by contracting and then relaxing large muscle groups. After a person learns to recognize when and where he is tense and understands that relaxation is simply an absence of tenseness in the muscles, he follows a program of systematically relaxing various parts of the body. The program (Jacobson, 1948) follows an anatomical hierarchy including the chief muscle groups of the limbs, trunk, neck, and head. Large muscle groups are studied first as the sensations from them tend to be most conspicuous. (See Appendix A for a complete description of Jacobson's PRT curriculum.) Jacobson suggested as much as 150 hours of practice to attain total self-induced relaxation; however, successes have been noted using much less training time (Hafner, 1968; Walton, 1980).

Jacobson (1942) compared relaxation training to daily rest periods to determine the most effective method for combating fatigue and nervous excitement. The results indicated that subjects using relaxation training were better able to replace states of neuromuscular hypertension. Jacobson also investigated the relation of restlessness, insomnia, and fatigue, as well as apprehension and fear, to states of neuromuscular hypertension. The accumulation of his research leaves little doubt that the ability to relax is essential to good mental and physical health (Hafner, 1968).

Jacobson Derivatives

Wolpe (1958) utilized Jacobson's relaxation techniques in reducing anxiety, which Wolpe maintains is the universally prominent neurotic behavior. His technique of systematic desensitization consists of three separate sets of operations:

1. Training in deep muscle relaxation.
2. Construction of anxiety hierarchies.
3. Systematically presenting each item on the anxiety hierarchies to the imagination of the relaxed patient (desensitization procedure) (Hafner, 1968).

The method of relaxation taught is essentially Jacobson's technique. Wolpe (1958) stated that in 122 cases treated for anxiety with his methods, 44 percent were apparently cured, 48 percent were improved, 7 percent were moderately improved, and 3 percent unimproved according to a variety of dependent measures including anxiety scales, observations, and self-report measures.

Due to the early success of investigators such as Jacobson and Wolpe, a variety of relaxation techniques have been developed using to a large degree the techniques suggested by Jacobson and Wolpe. Eryl Evans (1976), for example, developed a relaxation technique combining principles from autogenic training, Gestalt, and learning theories and called it Eclectic Relaxation Therapy. He states, "The primary aim of eclectic relaxation therapy is to reduce the overall tension level of the subject and to educate and condition him to respond spontaneously to a slight increase in tension whether it comes from an internal or external source by immediately producing the antianxiety reaction of relaxation" (p. 149). Evans' relaxation program is presented exclusively by tape recordings. Each tape lasts approximately 10 minutes after which a discussion session ensues. Evans concluded, from patient reports, that "relaxation therapy would promote better mental health, and the result of this would be favorable changes in the capacity to work, efficiency, learning ability and absenteeism" (p. 151).

Another modified relaxation technique was developed by Alfred French and Joe Tupin (1973) which they describe as being simple and effective. The method they propose consists of three steps: (1) muscular relaxation and passive breathing, (2) allowing the mind to drift in the direction of a very pleasant and restful memory, and (3) presenting the memory to the mind in a manner that effortlessly focuses attention on the memory. French and Tupin report that this method generally requires no more than three or four minutes for instruction and, in many cases, patients reported an immediate sense of relaxation and well being.

Koeppen (1974) reported on the significant contribution of relaxation techniques to a counselor's repertoire, especially for use with children. He states that "relaxation exercises designed especially for children can help them to become aware of the feelings of body tension and provide skills to reduce it" (p. 15). Koeppen prefers using relaxation scripts designed to the population receiving the training. These scripts should be appealing to the population and should include specific interests of the individuals. He further states that repetition and disciplined practice are imperative. Each child or group of children is unique. Timing and pacing must follow the individual pattern created in the specific situation.

One further word of caution suggested by Koeppen requires consideration. According to Koeppen, children tend to "get into" this type of experience as much or more than adults, and they are likely to be a bit disoriented if the session ends abruptly. Preparing children to leave the relaxed state is just as important as proper introduction and timing.

Koeppen suggests that although children will agree that they want to learn how to relax, they don't want to practice relaxation under the watchful eyes of their classmates. Fortunately, several muscle groups can be relaxed without extensive gross motor activity, thus enabling practice to proceed unnoticed. Additionally, no more than 15 minutes should be devoted to the exercises at any one time and no more than three muscle groups should be introduced at one time.

Several investigators have included in their studies at least portions of their relaxation curriculum narrative. Again, the vast majority have incorporated techniques suggested by Jacobson and Wolpe. Emery (1969), for example, included specific instructions in his text.

> Okay, just settle back in the chair and relax as best as possible. Take a few deep breaths and begin to feel yourself let go. . . . Now, extending both arms straight out clench your fists more and more tightly as I count up toward 5 . . . 1 . . . 2 . . . 3 . . . Good . . . 4 . . . Relax. Just let your arms drop wherever they will and begin to appreciate the difference between the feelings of tension, which you felt a few seconds ago, and the feelings of relaxation in your hands and arms now. . . . Now let's concentrate on the muscles in your forearms, extending both arms straight out once again, only this time push forward with your hand . . . 1 . . . 2 . . . 3 . . . 4 . . . hold it . . . now, relax. Just let your arms go up and concentrate on the warm, tingling feelings of relaxation spreading throughout your forearms. (p. 52)

Certainly Jacobson's original work in relaxation training has led to a multitude of diverse methodologies; however, most procedures contain at least a portion of Jacobson's technique. Many techniques cited in the literature merely suggest guidelines of the actual training procedure; thus, virtually all techniques are unique as a result of the variety of voice inflections, timing, instructions, and environmental conditions. More recently commercial tapes have been prepared (Braud, 1978; Lowenstein, 1978) which use professional voices and sound effects.

Biofeedback Techniques

Biofeedback is a technique developed relatively recently within experimental psychology (Budzinski & Stoyva, 1969). It involves the use of electronic equipment to monitor a subject's physiological

processes and then makes these processes known to the subject by means of some external stimulus such as light or tone. This externalization of internal functioning allows for "voluntary" control over physiological systems. Biofeedback is essentially a technique of behavior modification "under the skin" (Braud, Lupin, & Braud, 1975). An investigation of research comparing relaxation training and biofeedback has revealed equivocal results (Bhatura, Arnold, Lorance, & Gupta, 1979; Chang-Laing, & Denney, 1976; Reinking & Kohl, 1975). However, relaxation training is easier, less expensive, and more practical. Because of these and other reasons Braud (1978) maintains that, in the long run, progressive relaxation training might be a superior technique.

Effectiveness of Relaxation Training in Clinical Settings

Until recently, research on the effectiveness of relaxation training was primarily restricted to clinical, highly controlled environments. Given Jacobson's optimism in relaxation training producing almost a "panacea effect," a variety of investigations have attempted to apply relaxation training in clinical settings to determine differential effects. The research accomplished in these settings, however, has led to experimentation within more "natural" settings, like the public school classroom. Thus, the research in non-educational milieus has become the groundwork on which more recent studies justify their efforts. Jacobson (1938), Wolpe and Lazarus (1966), and Schultz and Luthe (1959) all reported data confirming their individual procedures produced relaxation.

The use of generally accepted techniques, such as those suggested by Jacobson and Wolpe, may lead one to be optimistic about comparing investigations of relaxation training by giving a relatively uniform structure to training sessions. However, the purity of relaxation training techniques, per se, has been ameliorated by the incorporation of a variety of additional techniques such as hypnotic suggestions (Paul, 1969), relaxation plus biofeedback procedures (Braud et al., 1975; Bhatura et al., 1979; Reinking & Kohl, 1975), waking hypnosis (Evans, 1976), autogenic relaxation (Schultz & Luthe, 1959), and meditation (French & Tupin, 1973), in combination with PRT.

Israel and Beiman (1977) compared the effects of live relaxation, taped relaxation, and self-regulation on volunteer tense persons. Although no attempt was made to match subjects or specifically define subjects, EMG feedback data revealed no difference between groups; however, all groups significantly reduced tension levels. A study conducted by Russel, Wise, & Stratoudakis (1976) found no improvement on behavioral data in levels of test anxiety on 19 college students. Students were randomly placed in three groups; systematic desensitization training, cue-controlled relaxation training, and control. Although a self-report battery suggested improvements in both experimental groups, behavioral data based on observations revealed no significant changes.

Reinking and Kohl (1975) examined the effectiveness of four types of relaxation training. Two dependent measures were used: (1) self-report measures of relaxation and (2) use of electromyography (EMG). The four relaxation interventions were (1) Jacobson-Wolpe training, (2) EMG feedback, (3) EMG feedback and

Jacobson-Wolpe instruction, and (4) EMG feedback and monetary reward. Fifty subjects were randomly chosen from undergraduate psychology students, age range from 17 to 25, containing 31 females and 19 males. The results indicated increased relaxation in all but the control group. However, the EMG groups were found to be superior to the Jacobson-Wolpe technique groups in speed of learning and depth of relaxation. Similarly, Davidson and Hiebert (1971) compared the effect of progressive relaxation tapes, relaxation instruction, and a control group receiving no tapes or instructions on 27 student nurses. The results indicated that autonomic arousal (using a skin conductant measure) decreased significantly within the two experimental groups, which were found to be homogenous after treatment, while no change was found in the control group. Although the comparative results of relaxation training with other procedures in clinical settings are equivocal, relaxation training has been demonstrated to be an effective means of producing a relaxed state in a variety of populations (Davidson & Hiebert, 1971; Mathews & Gelder, 1969; Rachman, 1965; Yorkston & Sergeant, 1969).

Further evidence has supported the idea that relaxation improves one's ability to cope with stress (Gelder & Marks, 1966), stressful images (Paul, 1969; Wolpe, 1966), public speaking anxiety (Goldfried & Trier, 1974), sleep (Lowenstein, 1978), test anxiety (Deffenbacher & Payne, 1977), film induced threats (Folkins, Lawson, Opton, & Lazarus, 1968), psychosomatic disorders (Moore, 1965), and pain (Davidson & Hiebert, 1971).

The research on relaxation in non-educational settings using a variety of independent and dependent measures has seemingly

produced enough evidence to induce experimentation within the educational setting. Although extensive experimentation has not evolved within the classroom environment, there is a substantial body of work which will serve as a base for further research into the effectiveness of relaxation training.

Effectiveness of Relaxation Training in Education Settings

As in the clinical milieu, much of the research involved in educational settings has been confounded by a variety of techniques including biofeedback and autosuggestions. Additionally, determination of specific effects has been compounded by relatively imprecise criteria for selecting subjects (Bhatura et al., 1979). Despite these apparent problems researchers have attempted to adapt relaxation procedures to the classroom.

An important consideration in applying relaxation training to the educational environment is one of accomplishing a desired state of relaxation. That is, relaxation is to be used to increase productivity, rather than decreasing productivity as a result of being "too" relaxed. Robert McKim (1974) explains the necessity of acquiring relaxed attention in the education setting, as total relaxation (Jacobson) cannot stimulate the thought processes effectively. The desired relaxation state, then, for an educational setting involves a heightened sensitivity to the thought processes, rather than depressing the thought process to an extent to which education is not feasible (McKim, 1974).

Investigations of Relaxation Training on Non-Handicapped Children

Russell et al. (1976) developed what was termed "cue-controlled" relaxation as a treatment for test anxiety. Cue-controlled relaxation was accomplished by pairing relaxation with a cue word. Russell found his method to be more effective in decreasing test anxiety than other methods such as desensitization, according to self-reports and behavioral data. Previous research examining academic improvement as a function of desensitization, however, has produced equivocal findings. Some researchers have noted improvement in academic achievement following desensitization (McManus, 1971), while others have reported no change (Mitchell & Ng, 1972).

The possibility that relaxation paired with instructions concerning its application may be an effective treatment, has been demonstrated. Chang-Laing and Denney (1976) supported this argument by successfully applying relaxation as training in self-control. They treated test-anxious undergraduate students with one of four procedures: (1) applied relaxation, (2) systematic desensitization, (3) relaxation only, and (4) no treatment (control). The results on three test anxiety scales indicated a decrease in test anxiety in the three experimental groups.

Studies of the application of relaxation to children in public elementary, middle, and high school settings are too few. Notable exceptions are included in Tables 1 and 2. Table 1 includes relevant studies on non-handicapped students. Table 2 includes relevant studies on handicapped students. Several of these studies most relevant to the current study are described on the following pages.

Table 1

Review of Educational Literature on Relaxation Training with Non-Handicapped Populations

Studies	Problem	Population/Ind. Variables	Dependent Var.	Discussion
Laxer, Quarter, Kooman, Walker, 1969	Effects of syst. desen. & relax. on test anxiety	33 H.S. students 1. Relax. group 2. Desen. group 3. Control group	Anxiety scales Achievement scores	Relax. more effective than system. desen. Both revealed reduction in anxiety Little improvement in academic scores
Carter, Synolds, 1974	Effects of relax. training on handwriting quality	32 normal IQ elemntary boys	5 pt. subjective handwriting quality scale	Accord. to subjective measure quality improved
Laxer, Walker, 1970	Effects of counterconditioning vs. relaxation in reducing test anxiety	119 test anxious H.S. students 1. Sys. Desen. group 2. Relax. group 3. Simulation 4. Relax., Sys. Desen. 5. Attention control 6. Control	Anxiety scales Test scores	Treatment effective only in conditions where relax. was involved
Chang-Laing, Denney, 1976	Effects of relax. training on test anxious students	Undergrad. test anxious students 1. Applied relax. group 2. Sys. desen. group 3. Relax. only group 4. Control	3 anxiety scales 3 test anxiety scales	Applied relaxation was found to be the effective, however, all treatment con. were found to be effective Self-report anxiety scales used

Table 1 - Continued

Studies	Problem	Population/Ind. Variables	Dependent Var.	Discussion
Bergland, Chal, 1972	Effects of relax. training on Jr. High boy	16 yr. old drug abuser	Self-report Therapist perception	Relaxation was paired with therapy. Improvement in attitude Useful tool for counselors

Table 2

Review of Educational Literature on Relaxation Training with Handicapped Populations

Studies	Problem	Population/Ind. Variables	Dependent Var.	Discussion
Lupin, Braud, Braud, Duer, 1976	Effectiveness of relaxation tapes on hyperactive children	13 hyperactive children	Parent records (pre-post) Battery ITPA WISC Frequency Behavior Count 1. Working on assigned task 2. Communication w/other child. 3. Out-of-seat 4. Looking around room 5. Nervous beh.	Use of 3 commercially designed tapes Hyperactive children showed behavioral improvement by practicing relax. exercises using visual imagery tapes Project helpful w/ED child Use of autosuggestion No control for placebo Evaluators not blind
Simpson, Nelson, 1974	Breathing control (biofeedback & operant conditioning) to control hyperactivity	6 LD elementary age 3-Breathing control & attention training 3-control	Respiration rate Attention test scores Teacher ratings	Breathing control and attention training found to be successful

Table 2 - Continued

Studies	Problem	Population/Ind. Variables	Dependent Var.	Discussion
Braud, Lupin, Braud, 1975	EMG feedback in controlling hyperactivity	6 yr. old hyperactive boy	Teacher observation Subjective behavioral rating Parent observation Biofeedback data	Relaxation tapes emphasized Suggest use of relaxation tapes with reinforcement
Walton, 1980	Effects of 16 wk. relaxation and biofeedback program on inappropriate behaviors	5 ED boys (age 12-14) Self-contained	EMG measures (pre-post) Inappropriate behavior frequency 1. In-seat 2. Aggression 3. Verbal Behavior 4. Personal Motor Behavior 5. Off-task	Reeducation in inappropriate behavior Reduction in muscle tension Need for control group
Braud, 1978	Effects of biofeedback and Progressive relaxation upon hyperactivity	15 hyper. children 15 non-hyper. children	EMG measures Behavioral rating scales Psychological testing	Evaluators not kept blind Biofeedback--greater reduction in muscle tension PR--as good in behavioral ratings PR--more generalizable

Pinsker (1971) investigated the use of relaxation in increasing academic behaviors. In general education elementary classroom students were placed in a relaxed state for 10-20 minutes and were asked to memorize 50 new English words. By conventional means, the average recall per group was 70-80 percent. Using the state of relaxation method, the average recall per group was 92-98 percent. Pinsker concluded the following: (1) the state of relaxation is reached quite easily, (2) words were learned without any special effort, (3) the training is harmless to the health, and (4) instructions to memorize during the relaxed state lingered and sharpened other senses of memorization, such as visual memory. However, Pinsker does not reveal what his relaxation procedure is, and again no control group was used for possible novelty effects.

Investigations of Relaxation Training on Handicapped Children

Lupin, Braud, Braud, & Duer (1976) demonstrated the effectiveness of relaxation tapes for minimal brain-injured children. The treatment program consisted of six commercially prepared tapes for parents and six for children. Both parents and children were instructed to use the tapes on a daily basis for a period of three months. Classroom behaviors of the children were analyzed for pre- and post-treatment change. The children were found to be on-task an average of 78 times out of a possible 160 before treatment and 95 times after treatment. For nervous and hyperactive behaviors, the pre-treatment average was 32, with the average dropping to 13 for post-treatment. Additionlly, Lupin reported that children who listened to the tapes more frequently made more improvement on

parental behavior rating scales than children who listened to the tapes less frequently. The behavioral improvements, as reported by parents, were that children appeared happier (frowned and grumbled less often) and improved in their interpersonal relations (a decrease in poking, tormenting, and teasing). Lupin et al. concluded that "it is important that children . . . use relaxation in their daily lives as a technique to handle stress and frustration and as a behavioral response incompatible with hyperactivity and tension" (p. 111). In this study, however, commercially prepared tapes were used which involve the use of autosuggestion and desensitization techniques. As a result it becomes difficult to subscribe the relative specific effects of relaxation alone and other procedures.

Several studies have compared the effects of biofeedback techniques with relaxation techniques on hyperactive children and adolescents. Braud (1978) compared 15 hyperactive children to 15 non-hyperactive children. The hyperactive children were found to have significantly higher muscular tension levels, more behavior problems and lower test scores than the non-hyperactive children. Individuals in both hyperactive and non-hyperactive groups were randomly assigned to three groups of five subjects each (biofeedback, relaxation, and control groups). EMG biofeedback resulted in significantly greater differences in EMG-muscle tension than did progressive relaxation. However, in no case except EMG decreases was biofeedback found to be superior to progressive relaxation according to parental ratings and psychological testing. As a result of this experimentation, Braud suggested progressive

relaxation may be a superior technique to EMG biofeedback. Braud (1978) referred to the progressive relaxation training tapes used in his investigation as "identical to the modified Jacobson relaxation technique employed by Lupin et al. (1976)" (p. 74). Again, this "modified" technique incorporates several techniques which compound analysis of simple muscle relaxation techniques.

Similarly, Walton (1980) paired relaxation curriculum with biofeedback to determine the combined effects on the inappropriate behaviors of five severely emotionally handicapped boys. As in Braud's (1978) study, relaxation curriculum incorporated isometric exercises, autogenic training, mind/body relaxation techniques along with biofeedback. Walton developed the following behavior clusters to discriminate inappropriate behaviors in the children observed:

In-Seat Motor Behavior

1. Motor Object (rocking chair, moving chair in place, throwing objects)
2. Motor Position (sitting out of position, crouched down in chair, head lying on the desk)

Out-of-Seat Motor Behavior

1. Out-of-Seat Behavior (out-of-seat and moved from vicinity of desk)
2. Movement (running, jumping, skipping)
3. Object (grabbing, taking, throwing physical objects)

Verbal Behavior

1. Aggression (yelling or swearing at others, name-calling)

2. Distracting (talking to others without permission, loud coughing or other noise making, singing, whistling)
3. Emotional (screaming, crying, inappropriate laughter)

Personal Motor Behavior

1. Motor Manipulation (thumbsucking, hair twisting, fingernail biting)
2. Self-injury (hitting self, banging head, poking pencil or pen into skin)
3. Perseverative (finger or object tapping, rocking motion)

Off-Task Behavior

1. Any self-initiated activity that diverts child away from assigned tasks, other than the behaviors listed above
2. Withdrawal, staring, daydreaming, ignoring.

In Walton's study, 16 20-minute training sessions were carried out over a 16 week period. After the 16 sessions, a post-behavior observation sequence was initiated, following the baseline schedule. The behaviors used in the pretest were again measured in terms of their duration and frequency.

The change in behavior showed a reduction of over 50 percent in four of the five children involved in the study. Walton concluded that there seems to be a tendency toward a reduction of observed inappropriate behavior of students involved in a relaxation curriculum, indicating a greater ability on the part of the students to control

their body functions and to relax. Two problems, however, seem to taint the optimistic conclusions of Walton. First, there was no control for possible novelty effects. Second, because a variety of relaxation techniques were utilized, it is difficult to discern which portions of the "relaxation curriculum" effected behaviors, which did not, and which were even possibly detrimental.

Summary

Although researchers have reported dramatic results in reducing anxiety and increasing appropriate behaviors by use of a Progressive Relaxation curriculum in both educational and non-educational environments, three obvious problems cloud the results of this literature. First, the term relaxation training has been used to describe a variety of curricula ranging from specifically Jacobson's muscle relaxation training to a combination of relaxation training, biofeedback, autosuggestion, and cue-controlling. Few studies have addressed this issue of methodology. One exception was conducted by Chang-Laing and Denney (1976). However, they used only test anxiety as a dependent variable and used a general population of undergraduate college students; thus, generalization to specific populations becomes difficult. Virtually all other investigations in the current literature have not used muscle relaxation along as treatment, but have used combinations which confuse efforts to subscribe relative effectiveness of possibly just one technique. Second, the studies reviewed appear to have used relatively imprecise criteria for selecting

subjects, making generalizations to larger populations difficult. One notable exception to this problem is the Walton (1980) study in which emotionally handicapped children were defined according to specific inappropriate behaviors, e.g., in-seat, verbal, and motor behaviors. It is interesting that the Walton (1980) study is virtually alone in determining the effects of any kind of relaxation training on the emotionally handicapped population, which perhaps display the most severe behavioral problems (Kauffman, 1977). Third, the studies reviewed appear to have neglected the possibility of the novelty effects of a relaxation training program.

Application of Literature to the Current Study

The current study will involve only Jacobson's technique which makes this study unique in that all other studies found in the literature have incorporated additional elements not included in Jacobson's muscle relaxation curriculum. Additionally, no studies found in the literature have viewed the effects of relaxation training on emotionally disturbed children other than those incorporating biofeedback training as part of the relaxation curriculum. The current study investigated the possible use of a relaxation training curriculum alone with emotionally disturbed children. Assuming relaxation training is found to be helpful, an alternative treatment for problem behaviors, which requires little or no training to administer, may be available to teachers in the field.

CHAPTER III

METHOD AND PROCEDURES

Chapter III contains four major sections pertaining to the methods and procedures used in this study. These sections are a description of the subjects; a description of research procedures, including the experimental design, a rationale for the selection of the design, and the dependent variables; the data collection procedures; and a description of the relaxation training (RT) curriculum.

Subjects

The subjects for this study were three elementary school students: two males, 9½ and 10½ years of age, and one 9 year old female. A further description of the subjects can be found in Appendix B.

There were four selection criteria that the subjects had to satisfy before they were considered eligible for participation in this study. These criteria were

1. Each child must currently attend a Florida public elementary school resource or self-contained classroom for emotionally handicapped students.

2. If psychostimulant medication was implemented in a program of pharmacological behavior modification, it must have been discontinued for a minimum period of four months immediately prior to participation in the study or must be continued consistently throughout the duration of the experiment.

3. It must be determined that the child exhibits specific levels of inappropriate behaviors; that is, he/she must exhibit (a) off-task behavior more than 30 percent of the time in duration and (b) out-of-seat behavior more than 10 percent of the time in duration, during three randomly selected observation periods (10 minutes each in length) conducted by the investigator.

Selected teachers of emotionally handicapped students in the public school systems of the Central Florida area were asked to identify emotionally handicapped students who are considered to exhibit excessive inappropriate behaviors, that is, off-task and out-of-seat. The investigator observed potential subjects 10 minutes each during three random observation periods. The student's recorded out-of-seat and off-task behaviors had to meet the above criteria before the student could be considered eligible for participation.

4. Before a subject could be chosen for participation in this study, his/her special education teacher had to agree that throughout the duration of the experimental sessions the student will receive a consistent curriculum of individualized academic seatwork.

Verification of Tapes

In an effort to ensure that the relaxation training tapes devised are at an understandable and applicable level for the

subjects, a verification procedure was applied. The investigator randomly chose two children (ages 8 and 9) for tape verification. These children were no older than the youngest of the subjects used in the investigation. They were observed to determine if they could accurately follow the directions given in the tape recordings of relaxation training (RT). Following administration of verification tapes each child was asked to relay what directions were given and what he was expected to do and what he did. If a child did not mention certain directions, he was asked if he remembered the specific directions and was asked to demonstrate an understanding of the directions either verbally or through motor response. Changes in the tape narrative were made until two children no older than the youngest subject could follow 100 percent of the directions given.

Procedures

Experimental Design

The experimental design for this study was a variation of the multiple baseline design across individuals (Huck, Cormier, & Bounds, 1974). A multiple baseline procedure is used when the experimenter is attempting to show that there is a reliable experimental variable (e.g., RT), in that each behavior changes maximally only when the experimental variable is applied (Baer, Wolf, & Risley, 1968). Subject A was on an A B B1 A1 design, subject B was on an A B B2 A design, and Subject C was on an A B B3 A1 design. A third subject was used to aid in interpretation

of possible differing results in comparing two subjects. The treatment conditions are summarized below.

Baseline Observation (A). Observations during the baseline period were made in the same setting as treatment conditions and at approximately the same time by trained observers. Baseline conditions consisted of a minimum of five days and were extended until a stable pattern or trend was determined. A stable pattern is determined when off-task and out-of-seat behaviors remain consistent ($\pm$ 7 percent) relative to the levels of behavior determined through the selection process, that is, a variation of less than 7 percent on mean occurrence of behavior levels in baseline conditions versus behavior levels acquired during the selection of subjects process.

Application of nonexperimental (novelty) tapes (B). Nonexperimental tapes have been included as a measure of control for any novelty effects. The novelty or innovative nature of the treatment compared with the routine of the environmental setting may be a variable which may confound the results. These effects are perhaps prevalent in situations where new and innovative experimental programs have been inaugurated (Huck et al., 1974).

Narrative tapes were introduced immediately following baseline conditions to insure that the results obtained were not due to novelty effects. Short narratives (approximately 10 minutes in length, see Appendix C) were recorded on cassette tapes and administered to all three subjects for five days prior to treatment conditions (Bx, i.e., B_1, B_2, and B_3). The classroom teacher administered the tapes blindly according to a given schedule and was asked to treat the tapes as any other treatment program

utilized within the classroom. It was anticipated that this treatment desensitized all participants (i.e., teacher and subjects) to the introduction of a possibly new mode of curriculum input.

One week training session (B_1). The B_1 Phase consisted of the introduction of relaxation tapes immediately following the non-experimental tape desensitization conditions. Three versions of the relaxation training were administered consecutively for a period of five days (Tape 1, 2, 3, 2, 3). (See Appendix C for tape narratives.)

Two week training session (B_2). The B_2 Phase consisted of the introduction of relaxation tapes immediately following non-experimental novelty conditions. Three versions of the relaxation training were administered consecutively for a period of nine days (Tape 1, 1, 2, 3, 2, 3, 1, 2, 3).

Three week training session (B_3). The B_3 Phase consisted of the introduction of relaxation tapes immediately following non-experimental novelty conditions. Three versions of the relaxation training were administered consecutively for a period of 14 days (Tape 1, 1, 2, 3, 2, 3, 1, 2, 3, 2, 3, 1, 2, 3).

Baseline Observation (A_1). In Phase A_1 all interventions were discontinued, however, observations made at approximately the same time as during treatment conditions continued for a period of four days for all subjects. The second baseline conditions were interjected to determine possible residual effects of relaxation training and/or to substantiate the obtained results during treatment conditions.

Rationale for Selection of Design

The experimental design chosen for this investigation was selected for the following reasons:

1. Single subject designs are particularly suited to investigations which attempt to observe specific target behavioral changes within individuals (Borg & Gall, 1979).

2. Multiple baseline designs allow the researcher to establish a relatively strong causal inference about the relationship between the independent and dependent variables of the behavior changes from the baseline at the point when the independent variable was introduced (Huck et al., 1974).

3. The specific variation of the multiple baseline was selected due to the nature of relaxation training which requires intensive daily practice to obtain maximum benefits (Jacobson, 1978). The variation of length in relaxation treatments (i.e., one, two, and three weeks) was selected to discern variations in effect due to length of training.

Blind Condition

The relaxation training curriculum was introduced under blind conditions in which the subjects, parents, and observers were unaware of timing of the introduction of relaxation training. The participating teacher was unaware of the timing of the introduction of relaxation training; however, she was aware of the intent of the study and was responsible for the daily introduction of the cassette tapes.

The observers were kept in a blind condition with respect to the intent of the study. The observers were told by the experimenter that the purpose of the research was to determine approximate levels of children's behavior. The parents were not blind to the intent of the study but were unaware of its design.

Dependent Variables

Two dependent variables have been chosen which are observable behaviors representative of hyperactivity (Rose, 1978). These dependent variables are operationally defined below.

1. Off-Task: Subject not looking at the relevant assigned task stimulus. Off-task was defined as the subject's eyes not looking at the assigned task stimulus. Before recording off-task behavior, the child was given a five second latency period subsequent to the termination of the previous "on-task" episode. The unit of measurement of this variable is duration, i.e., number of seconds off-task behavior was observed during a given 10 minute observation period.

2. Out-of-Seat: Subject not having posterior on the seat portion of the desk, chair, or bench. The unit of measurement for this variable is duration, i.e., number of seconds of out-of-seat behavior observed during a given 10 minute observation period.

Task Stimulus

The participating teacher was required to present a task stimulus immediately following training sessions. The assigned work followed a consistent format of in-seat individualized academic work consisting of a spelling and reading program of worksheets and textbook exercises.

Subjects were assigned the materials at approximately the same time every day. The assignments were constructed so that the given materials could not be completed in less than 30 minutes. These conditions were established to provide a consistent setting from which to make behavioral observations.

Data Collection

The data collection procedures followed those used by Rose (1977) with minor variations. The data were collected on the dependent variables during daily observation of the subjects in their normal school environment, that is, the classroom. These observations occurred at approximately the same time twice each day and lasted for a period of 10 minutes each. Observation 1 was made for a 10 minute period immediately following administration of tapes. Observation 2 was conducted 30 minutes after administration of RT tapes for a 10 minute period. The second observation period was included to determine if the treatment demonstrated effects on behaviors 30 minutes after RT (i.e., the "delayed" effects of RT).

The data were recorded during observations on a survey recording form. The recording forms provided a representation of duration of behavior during 10 minute intervals (see Appendix D for Raw Data). The basic datum used in this study was duration. Duration, the amount of time that the subject emits a given behavior (Pennypacker, Koenig, & Lindsley, 1972), was the datum for off-task and out-of-seat behaviors. The duration data were measured by a hand held stopwatch. This stopwatch was started by the observers at the beginning of each observation period and allowed to run uninterrupted

for the full 10 minutes. The observers were required to make tally marks and record duration measures on the recording form. The data recorded during observation periods were then transferred to Standard Behavior Charts (Pennypacker et al., 1972) and equal interval charts for analysis.

Observers

The data collectors were two high school seniors attending Forest High School, Ocala, Florida. Data collectors were trained to be behavioral observers by the investigator during a pre-experimental training procedure using prerecorded videotapes of children exhibiting inappropriate behaviors. The skills acquired by the observers during the pre-experimental training sessions were

1. an understanding of dependent variables utilized,
2. accurate observations of the dependent variables on videotape,
3. facility with recording forms, and
4. facility with stopwatch.

The pre-experimental training period included the following procedures: explanation and discussion of dependent variables, observer responsibilities, role playing, and viewing prerecorded videotapes that were pre-observed in order to ascertain absolute standard data for both dependent measures.

Two observers were used during this study, both recording behavioral data on all three subjects. The observers were instructed to sit on opposite sides of the classroom to reduce visual contact with each other, potentially affecting the results. Observers were also instructed to refrain from involvement in classroom activities.

Observer Reliability

Observer reliability or inter-rater observer agreement on the dependent variables was determined by comparing the observers' data against the prerecorded standard data on several videotapes of children in educational settings. These data were compared using the "whole session method" (Repp, Deitz, Boles, Deitz, & Repp, 1976) in which the number of responses recorded by each observer are summed, the smaller number divided by the larger, and the quotient multiplied by 100 to yield percent agreement. The minimum requirement for satisfactory observer reliability was 80 percent for each behavior.

Data Analysis

Obtained raw data derived during behavioral observations were analyzed using the following measures.

1. Data on on-task and out-of-seat behaviors were graphed on equal interval and logarithmic charts. Data were then evaluated by visual examination comparing the variations in phases of the investigation (i.e., baseline, novelty, treatment, and second baseline).

2. Mean levels of observed behaviors representing each phase of the investigation were analyzed. Data were represented in mean values for the various phases of the investigation. The mean values on duration data were obtained by calculating the total number of seconds each subject exhibited the behaviors represented by the dependent variables during a particular phase of the investigation. That number was divided by the number of observation periods in a particular phase providing an average value of behavior levels.

3. A significant change, defined prior to implementation of experimental conditions, was determined if (a) off-task behavior levels changed no less than 10 percent in duration and (b) out-of-seat behavior changed no less than 10 percent in duration across phases of the investigation, e.g., AB, AB_1, or BB_1.

Ten percent mentioned in the above definition represents 10 percent change from one phase to another, e.g., AB, AB_1, or BB_1. For example, if Subject X was found to exhibit off-task behavior an average of 200 seconds in the Baseline (A) Phase; comparing this phase to a Treatment (Bx) Phase, significant change represents 10 percent change from levels found in the Baseline Phase. In this case a 10 percent change would be 20 seconds (i.e., 10 percent of 200 seconds = 20 seconds). Thus, if Subject X exhibited off-task behavior 200 seconds during the Baseline Phase and 170 seconds during the Treatment Phase, a significant decrease (> 20 seconds) would be indicated. Likewise, in comparing variations of observation periods (i.e., immediately following treatment and 30 minutes following treatment), significant change would be indicated when the mean behavior level during the second observation period differs $\pm$ 10 percent from the first observation period.

4. Ranges of variability of a given behavior within phases were calculated to describe the amount of variability that was shared across phases. Variability is defined as range between minimum and maximum values within phases.

Analysis of behavior by celeration slopes was not used in this investigation as a method of data analysis. Due to the wide range

of variability found within phases, it was decided that assigning slopes to behavior levels within phases would not account for the variability in measures.

Materials

Three relaxation training tapes were developed by the investigator which included only deep breathing and muscle relaxation exercises as described by Jacobson (1938, 1948, 1978). These tapes are described below. Tape narratives are presented in Appendix C.

Tape 1: Cassette Tape 1, 12 minutes in length, stresses deep breathing exercises but also includes basic muscle relaxation exercises.

Tape 2: Cassette Tape 2, 10 minutes in length, begins with deep breathing exercises and incorporates more intensive muscle relaxation exercises than in Tape 1.

Tape 3: Cassette Tape 3, 9 minutes in length, incorporates virtually the same content as Tape 2; however, changes in the explanation of exercises differ slightly.

The content of the three tapes differs for two reasons: (1) to break the monotony of hearing the same narrative repeatedly for an extended period and (2) to stress both aspects of the relaxation curriculum, i.e., deep breathing and muscle relaxation. All tapes basically include the content described in Appendix A as suggested by Jacobson (1938, 1948, 1970).

CHAPTER IV

RESULTS

Three subjects enrolled in a public elementary school program for emotionally handicapped children were selected to determine the effectiveness of a relaxation training curriculum in reducing levels of inappropriate behaviors. The following questions were examined in this investigation:

1. Does the relaxation training (RT) curriculum effect the duration of off-task behavior and/or the duration of out-of-seat behavior of emotionally handicapped children?
2. To what extent are the effects of RT different for a variety of lengths of training (i.e., 1, 2, 3 weeks)?
3. How does the withdrawal of RT effect the off-task and out-of-seat behavior of emotionally handicapped children?

The remainder of this chapter presents the data for the following dimensions of the experiment: criteria for selection of subjects, observer reliability, individual subject analysis, and subject comparisons.

Criteria for Selection of Subjects

Before participation in this study, subjects were required to meet the following conditions:

1. Exhibit off-task behavior more than 30 percent of time in duration during three 10 minute random observation periods.
2. Exhibit out-of-seat behavior more than 10 percent of time in duration during three 10 minute random observation periods.

The results of the criterion levels for the subjects used in this investigation are shown in Table 3.

Subjects A and B met the established criterion levels on both dependent variables (i.e., off-task and out-of-seat behaviors). Subject C was found to exceed the criterion for off-task behavior but was found to exhibit out of seat behavior an average of 9.17 percent of time during three random observations. Although Subject C failed to meet the criterion level for out-of-seat behavior, he was very close (0.83 percent) to meeting the criterion. Also, the teacher noted that Subject C was exhibiting lower levels of out-of-seat behavior during the observation periods than was normally observed.

Observer Reliability

The method used to determine observer reliability or inter-rater observer agreement was described in Chapter III. The results of the observer reliability checks obtained by the whole session

Table 3

Criterion Levels of Inappropriate Behaviors

Dependent Variable	Subject A		Subject B		Subject C	
	Number[1]	Percentage[2]	Number	Percentage	Number	Percentage
Off-Task						
Obs. 1	273	45.50	235	39.17	176	29.33
Obs. 2	292	48.67	184	31.67	226	37.67
Obs. 3	329	54.83	322	53.67	192	32.00
Total	298	49.67	247	41.12	198	33.00
Out-of-Seat						
Obs. 1	121	20.17	36	6.00	23	3.83
Obs. 2	123	20.50	144	24.00	42	7.00
Obs. 3	45	7.50	48	8.00	101	16.83
Total	96	16.00	76	12.67	55	9.17

[1]Number of seconds behavior was observed during 10 minute observation period.

[2]Number of seconds observed divided by 600 possible seconds X 100.

method (Repp, Deitz, Boles, Deitz, & Repp, 1976) are listed below. Standard refers to predetermined levels of behaviors observed in a 10 minute video training tape. Responses refers to the level of behaviors recorded by observer trainees while viewing the video training tape.

	Observer 1			Observer 2		
Behavior	Standard	Responses	Percentage Agreement	Standard	Responses	Percentage Agreement
Off-Task Duration	234	229	97.86	234	218	93.16
Out-of-Seat Duration	96	92	97.87	96	93	96.88

Both observers in both behavior areas were found to exceed minimum (80 percent) reliability checks. In only one area, i.e., duration off-task for Observation 2, were reliability levels less than 96 percent.

To further strengthen observer reliability checks, the investigator recorded duration levels of one experimental subject in the classroom setting during two 10 minute observation periods. These levels were compared to the designated observers' recordings. The results of these checks obtained by the whole session method (Repp et al., 1976) are displayed in Appendix E. The results indicate agreements between observers for both behaviors were in no case less than 92 percent.

Analysis of Data for Each Subject

Due to the differing effects of treatment found across the subjects, data obtained on the dependent variables are reported in two ways; first by an individual subject analysis and then by a subject comparison.

Four methods were used for analysis of obtained data, i.e., visual inspection of raw data, mean analysis, percent change across phases, and range of variability. Results of a visual inspection of raw data and charted data are reported on daily trends of behavior levels within and across phases of the investigation. Means describe the amount of time (duration) that each behavior occurs within a particular phase. Means reported here were calculated by averaging observer reports of behavior levels for each observation period and for each subject. These daily levels of behavior were then summed and divided by the number of days within a particular phase producing mean levels of behavior. These mean levels are reported in Tables 4, 6, and 8.

Percent change refers to the percentage levels of significant change as described in Chapter III. A significant change is defined as 10 percent change from one phase to another phase, e.g., AB, AB_1, or BB_1. Since several changes exceed the 10 percent level to a marked degree, data are presented as representing (a) a <u>significant change</u> which represents $\geq$ 10 percent change, or (b) a <u>marked change</u> which represents a $\geq$ 20 percent change.

Analysis of change across phases will be demonstrated by percent change levels across the following phases:

AB - represents percent change of the initial baseline condition (A) to the novelty condition (B). This comparison is made to determine the extent of any novelty effects.

BBx - represents percent change of the novelty condition (B) to the treatment condition (Bx). This comparison is made to determine the primary treatment effects. It will be used to answer Question 1 and Question 2 of the investigation.

ABx - represents percent change of the initial baseline condition (A) to the treatment conditions (Bx). When no novelty effects are found this comparison substantiates treatment effects.

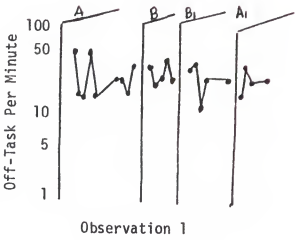
BxA1 - represents percent change of the novelty condition (B) to the second baseline condition (A_1). This comparison is made to determine the effects of generalization, i.e., do the effects of treatment continue despite the removal of the treatment condition. Changes in Phases AA1 and BA_1 will also be used to aid in the interpretation of the effects of generalization.

Data were finally analyzed through the range of variability of a given behavior within a particular phase. Range of variability describes the amount of the range that is shared across phases (Pennypacker, Koenig, & Lindsley, 1972).

Subject A

Subject A is a 9½ year old black male in the fourth grade who has demonstrated a history of hyperactive behaviors including excessive off-task and out-of-seat behaviors. Subject A received one week (five days) of relaxation training. Initially, Subject A was observed for nine days (18 observation periods) to obtain baseline data (Phase A). He then listened to a narrative short story tape, Moby Dick, for a period of five days (Phase B) in an effort to determine novelty effects. Next, the treatment condition (Phase B_1) consisted of five consecutive school days of taped relaxation training. All conditions were then discontinued; however, behavioral observations continued for a period of five days during Phase A_1.

Visual inspection of data. Figures 1 and 2 present graphically the daily levels of off-task and out-of-seat behaviors within the various phases of the investigation and for both observation periods. Figure 1 indicates that during Phases A and B of the first observation period, daily off-task duration appeared quite stable with little or no trend indicated. During the Treatment Phase (B_1) there appears to be a trend toward decreasing levels of behavior. A decreasing trend indicates a general decrease in inappropriate behavior levels. In Phase A_1 behavior levels appear to be on the increase. An increasing trend indicates an increase in inappropriate behavior levels. Figure 1 also indicates that off-task behavior in Observation 2 remained quite stable during Phase A. During the novelty phase (B) there appears to be a general trend upward indicating an increase in inappropriate behavior. Within the treatment phase (B_1), behavior levels start low and gradually increase again representing an



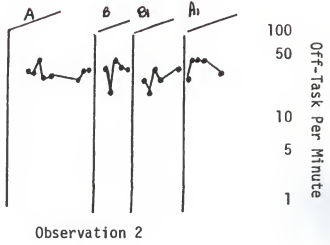


Figure 1

Charted Off-Task Behavior Levels:
Subject A

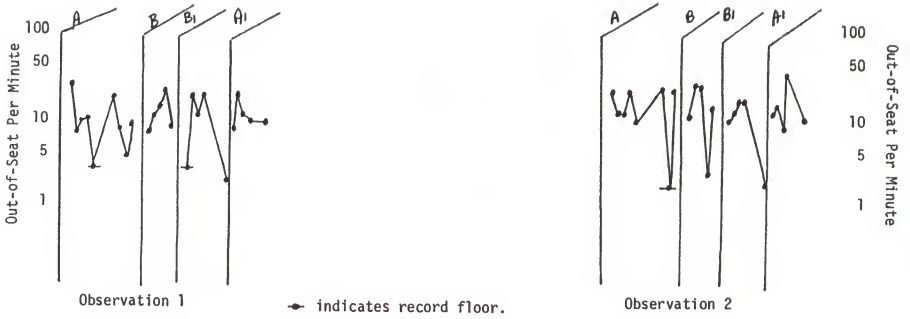


Figure 2

Charted Out-of-Seat Behavior Levels:
Subject A

increase in off-task behaviors. Off-task behavior levels during Phase A_1 appear generally to be at their highest of all phases for this observation period. In Figure 2, out-of-seat behaviors are graphically displayed for both observation periods. During Phase A behavior levels appear erratic but are generally on the decline. Out-of-seat behavior levels during Phase B appear generally higher than in Phase A but no general slope is indicated. Again behavior levels are erratic in Phase B_1 and no general trend was observed. In Phase A_1 no trends are indicated, however, the displayed data for Phase A_1 resembles the displayed data for Phase B in terms of range of daily mean levels.

Out-of-seat levels for Subject A during Observation 2 are also in Figure 2. Phase A appears quite steady with a possible decreasing trend toward the end of the phase. Although behavior levels in Phase B appear to be decreasing, behavior levels in Phase B_1 decrease even further indicating the lowest levels of out-of-seat behavior. With the withdrawal of treatment conditions (A_1) behavior levels begin an increasing trend, which represents a return of increased inappropriate behavior levels.

Mean Analysis. Mean levels of off-task and out-of-seat durations were obtained within all experimental phases (A, B, B_1, A_1) and for both observation periods (1, 2). These levels are presented in Table 4.

As can be seen in Table 4, mean levels of off-task behavior are consistently higher for Observation 2 than Observation 1 through all phases of the experiment. For Observation 1, off-task behavior levels decreased from Phase A to B (309 to 265 respectively) and

decreased further from Phase B to B_1 (265 to 226 respectively). Behavior levels then increased during Phase A_1 to a level higher than for either B or B_1. It may also be noted that for both observation periods behavior levels of both out-of-seat and off-task are lower during the treatment phase (B_1) than any other phase.

Table 4

Mean Levels Within Phases:
Subject A

Condition	Observation 1	Observation 2
Baseline (A)		
Off-Task	308.56	310.38
Out-of-Seat	124.11	154.50
Novelty (B)		
Off-Task	264.60	335.40
Out-of-Seat	153.80	147.80
Treatment (B_1)		
Off-Task	226.20	277.40
Out-of-Seat	116.60	113.40
Baseline (A_1)		
Off-Task	290.00	375.00
Out-of-Seat	152.50	147.20

Percent change. Significant (≥ 10 percent) and marked (≥ 20 percent) changes across phases of the investigation (AB, BB_1, AB_1, BA_1, AA_1, and B_1A_1) for Subject A are presented in Table 5. During Observation 1 off-task behaviors decreased significantly from Phase A to Phase B. Off-task behavior decreased significantly further from the novelty phase (B) to the treatment phase (B_1). This consistent decrease in levels of off-task behavior is indicated further by a marked (27 percent) decrease from Baseline A to Treatment B_1. No significant change was noted from the novelty condition to the second baseline condition (A_1).

Out-of-seat behavior levels increased significantly upon introduction of novelty tapes, but decreased markedly (24 percent) from the novelty condition to treatment. Due to rather high levels of out-of-seat behavior occurring during novelty conditions, the marked decrease upon introduction of treatment (B_1) was not great enough to differ significantly from baseline (A) conditions. No significant change from novelty (B) to second baseline (A_1) was indicated.

For Observation 2 behavior levels, off-task and out-of-seat did not differ significantly between baseline (A) and the introduction of novelty tapes (B). In comparing the novelty phase with treatment conditions (treatment effect), off-task behaviors decreased significantly (17 percent) and out-of-seat behaviors decreased to a marked degree (23 percent). These data are substantiated by a marked decrease in off-task and out-of-seat behaviors from baseline (A) to treatment (B_1). Although a significant increase was indicated in off-task behavior from novelty (B) to the second baseline (A_1), no significant change was noted in out-of-seat behavior.

Table 5

Levels of Significant Change: Subject A

Dependent Variables	Percent Change Across Phases					
	AB	BB_1	AB_1	BA_1	AA_1	B_1A_1
Observation 1						
Off-Task	-14.25*	-14.51*	-26.61**	+ 8.76	- 6.02	+22.00**
Out-of-Seat	+19.30	-24.19**	- 6.05	- .85	+18.62	+23.54
Observation 2						
Off-Task	+ 7.46	-17.29*	-26.73**	+10.56*	+17.23*	+26.03**
Out-of-Seat	- 4.34	-23.27**	-26.60**	- .41	- 4.73	+22.96**

* represents ≥ 10 percent change from the condition which was measured.

** represents ≥ 20 percent change from the condition which was measured.

\+ represents an increase across phases.

\- represents a decrease across phases.

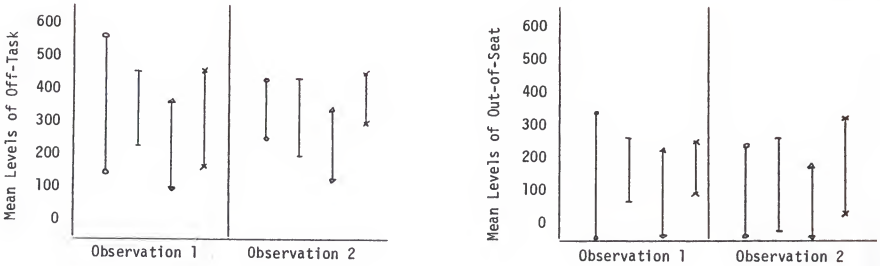
Range of Variability. The range of behaviors exhibited by Subject A within each phase of the study is presented below.

Range Within Phases (Min.-Max.): Subject A

	A	B	B1	A1
Observation 1				
Off-Task	176-569	210-437	108-361	183-481
Out-of-Seat	0-321	86-267	0-215	90-245
Observation 2				
Off-Task	281-404	199-430	188-318	294-442
Out-of-Seat	0-243	22-265	19-182	76-315

A graphic display of the amount of overlap in measures across experimental phases was chosen for dissemination of this information. Figure 3 presents graphically the ranges and overlap for each behavior demonstrated by Subject A.

Figure 3 indicates that, for Subject A, there was overlap in all the ranges of both off-task and out-of-seat behaviors when comparing the various phases of the investigation during Observation 1. For both off-task and out-of-seat behaviors, the baseline condition (A) revealed the widest ranges of behavior. In comparing maximum and minimum measures between phases, the maximum measure in treatment conditions does not exceed the maximum value for the other phases for both off-task and out-of-seat behaviors and for both Observations 1 and 2. Additionally, the minimum value of off-task behavior during the treatment condition was less than the minimum value of the other phases within both observation periods.



Key

= Baseline (A)

= Novelty (B)

= Treatment (B_1)

= Second Baseline (A_1)

Figure 3

Ranges of Variability: Subject A

Subject B

Subject B is a 9 year old white female in the fourth grade, enrolled in a public school elementary resource room for the emotionally handicapped. Subject B was observed for 9 days initially (two observations per day) to obtain baseline data (Phase A). She then listened to a narrative short story tape (Mysterious Island) for a period of five days (Phase B) in an effort to determine novelty effects. Next, the treatment condition (Phase B_2) consisted of two weeks (nine days) of taped relaxation training. All conditions were then discontinued; however, behavioral observations continued for a period of five days during phase A_2.

Visual inspection of data. Figures 4 and 5 present graphically the mean daily levels of behavior within phases. Figure 4 indicates that during the first observation period, off-task behaviors in Phase A were quite stable with a slight trend upward. An upward or increasing trend indicates an increase in inappropriate behavior levels. In Phase B off-task behaviors were slightly higher than in Phase A and rather stable despite one day with an extremely low level of off-task behavior. Parents and teacher were contacted to report any circumstances which may account for the low level of off-task behaviors. No unusual circumstances were reported. Levels of behavior in Phase B_2 start low, rise abruptly and are on the gradual decline again toward the end of relaxation training. A low or declining trend indicates a decrease in inappropriate behavior levels. In the second baseline (A1), the data are erratic.

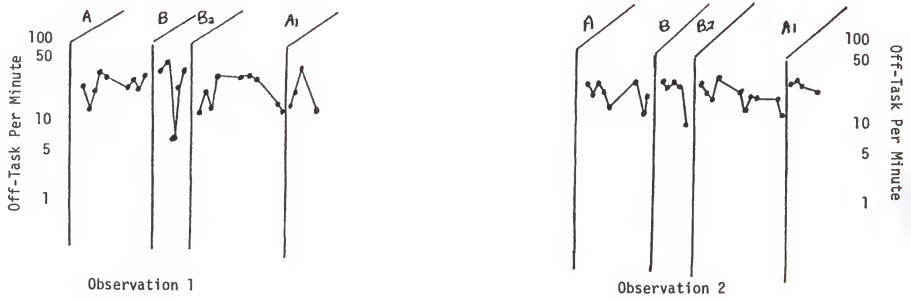


Figure 4

Charted Off-Task Behavior Levels:
Subject B

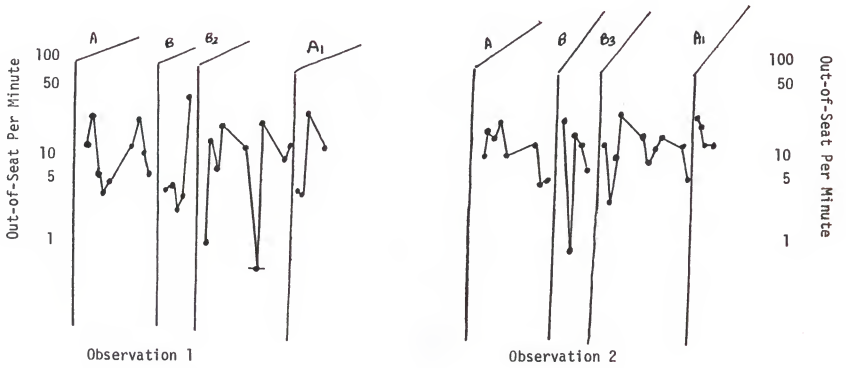


Figure 5

Charted Out-of-Seat Behavior Levels:
Subject B

For Observation 2 the daily off-task behavior levels are on the gradual decline in the baseline phase (A). In the novelty phase (B) behavior levels start off high relative to Phase A levels, but drop dramatically on the final day of the phase. During the treatment phase a rather consistently sharp decline is indicated which represents a decrease in off-task behavior levels. Upon removal of treatment conditions (A_1) behavior levels markedly returned to higher levels of off-task behavior.

Figure 5 demonstrates levels of out-of-seat behavior for both observation periods. As can be seen, daily levels of out-of-seat behavior for Subject B vary a great deal within phases of both observation periods. Due to this inconsistency between daily behavior levels, patterns and/or general slopes or trends are difficult to determine. It may be noted that it appears that during Observation 2, out-of-seat behaviors appear to gradually decrease within Phases A and A_1.

Mean analysis. Mean level of off-task and out-of-seat durations were obtained in all experimental phases (A, B, B_2, A_1) for both observation periods (1, 2) and are reported in Table 6. As can be seen in Table 6, higher levels of off-task behaviors are indicated in Observation 1 than in Observation 2 for all phases of the experiment except Phase A_1. It may be interesting also to note that for Observation 1 the lowest mean level of off-task behavior is in the second baseline condition (A_1), while for Observation 2 the highest levels occur in Phase A_1. For both observation periods off-task levels are lower in the treatment phase (B_2) than in the novelty phase (B).

Table 6

Mean Levels Within Phases:
Subject B

Condition	Observation 1	Observation 2
Baseline (A)		
Off-Task	291.78	268.75
Out-of-Seat	115.44	113.25
Novelty (B)		
Off-Task	339.20	285.60
Out-of-Seat	71.80	110.00
Treatment (B_2)		
Off-Task	268.00	254.70
Out-of-Seat	106.11	117.50
Baseline (A_1)		
Off-Task	254.00	353.25
Out-of-Seat	116.25	158.50

Out-of-seat behavior levels for both observation periods decreased during the novelty phase (B), increased during the treatment phase (B_2), and increased further in the second baseline phase (A_1). The highest levels of out-of-seat behavior are in the second baseline phase (A_1) and the lowest are in the novelty phase (B) for both observation periods.

Percent change. Significant (≥ 10 percent) and marked (≥ 20 percent) changes across various phases of the investigation (AB, BB_2, AB_2, BA_1, AA_1, and B_2A) for Subject B are presented in Table 7. During observation period 1, off-task and out-of-seat behavior levels differed greatly across phases of the investigation. Off-task behaviors increased significantly (14 percent) and out-of-seat behaviors decreased markedly (38 percent) from baseline (A) to novelty (B) conditions. The treatment effect (BB_2) indicates a marked decrease (21 percent) in off-task behavior and a marked increase (32 percent) in out-of-seat behavior. No significant change was noted for either behavior from baseline (A) to treatment conditions (B_2). In comparing novelty (B) to the second baseline (A_1), off-task behaviors decreased markedly (25 percent) and out-of-seat behaviors increased markedly (38 percent).

For the second observation period, no significant changes occurred across the AB and AB_2 phases. A significant decrease (11 percent) of off-task behavior occurred for the treatment effect (BB_2). In comparing the effect from novelty (B) to the second baseline period (A_1) for Observation 2, respectively, off-task behaviors increased significantly (19 percent) and out-of-seat behavior increased markedly (31 percent).

Range of variability. The range of behaviors exhibited by Subject B within each phase of the study is presented below.

Table 7

Levels of Significant Change: Subject B

Dependent Variables	Percent Change Across Phases					
	AB	BB_2	AB_2	BA_1	AA_1	B_2A_1
Observation 1						
Off-Task	+13.98*	-20.99**	- 8.16	-25.12**	-12.95*	- 5.22
Out-of-Seat	-37.80**	+32.34**	- 8.08	+38.24**	+ .70	+ 8.72
Observation 2						
Off-Task	+ 5.90	-10.82*	- 5.23	+19.15*	+23.92**	+27.90**
Out-of-Seat	- 2.87	+ 6.38	+ 3.62	+30.60**	+28.55**	+25.87**

* represents $\geq$ 10 percent change from the condition which was measured.

** represents $\geq$ 20 percent change from the condition which was measured.

\+ represents an increase across phases.

\- represents a decrease across phases.

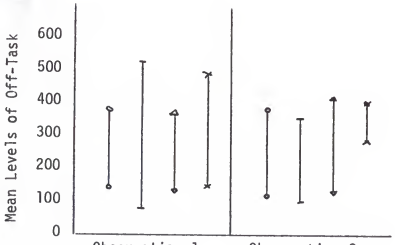
Range Within Phases (Min.-Max.): Subject B

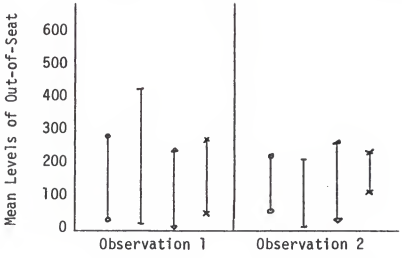
	A	B	B_2	A_1
Observation 1				
Off-Task	159-397	63-508	139-391	157-474
Out-of-Seat	35-284	21-414	0-214	31-297
Observation 2				
Off-Task	133-378	106-362	155-405	294-392
Out-of-Seat	40-202	7-201	26-281	101-233

A graphic display of the amount of overlap in measures across experimental phases was chosen for dissemination of this information. Figure 6 presents graphically the ranges and overlap for each behavior demonstrated by Subject B for both observation periods. Additionally, there was overlap in all the ranges of out-of-seat behaviors.

Off-task behaviors were found to be at their highest (508) and lowest (63) during the novelty phases of Observation 1. During the treatment condition behavioral ranges of off-task behavior were reduced to levels which appear comparable to Baseline A in Observation 1. During Observation 2, Phases A, B, and B_2 appear to have similar levels of off-task behavior. In the second baseline (A_1) phase the range of off-task behavior is reduced, but the maximum level appears to remain rather consistent.

The widest range of variability of out-of-seat behavior for both observation periods occurred in novelty phases of the first observation period. However, for Observation 1, the maximum and minimum values of out-of-seat behaviors were lowest during the treatment phase. In Observation 2, maximum and minimum values were





Key

= Baseline (A)

= Novelty (B)

= Treatment (B_2)

= Second Baseline (A_1)

Figure 6

Ranges of Variability:
Subject B

lower in the novelty phase than in the treatment phase (B_2). It may be interesting to note that the smallest range of behavior for both off-task and out-of-seat were found in the second baseline (A_1) phase during the second observation period.

Subject C

Subject C is a 10½ year old white male in the fourth grade. He received three weeks (14 days) of relaxation treatment. Subject C was observed for nine days initially (two observations per day) to obtain baseline data (Phase A). He then listened to a narrative short story tape (Pit and the Pendulum) for a period of five days (Phase B) in an effort to determine novelty effects of tape recordings with headsets. Next, the treatment condition (Phase B_3) consisted of 14 days of taped relaxation training. All conditions were then discontinued; however, behavioral observations continued for a period of five days during Phase A_1.

Visual inspection of data. Figures 7 and 8 present graphically the mean daily levels of behavior within phases. Figure 7 indicates that during the first observation period off-task behaviors appear quite stable during Phase A. In Phase B behavior levels appear to begin at rather high levels and decrease throughout the phase. A decrease or declining trend indicates a decrease in inappropriate behavior levels. At the onset of the treatment condition (B_3) behavior levels begin low, increase toward the middle of the phase, and then begin a gradual decline again. After removal of the treatment condition (A_1), behavior levels appear to immediately increase. An upward or increasing trend indicates an increase in inappropriate behavior levels.

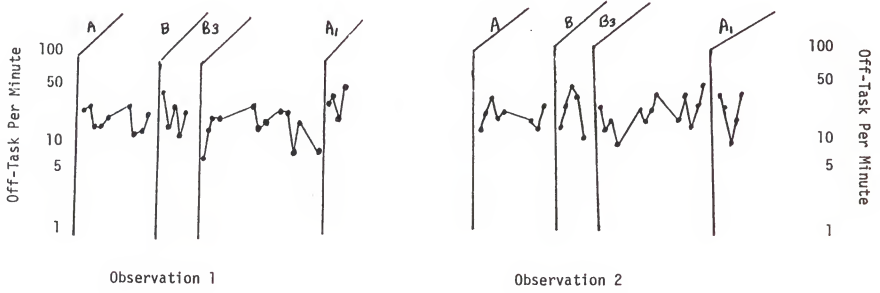


Figure 7

Charted Off-Task Behavior Levels:
Subject C

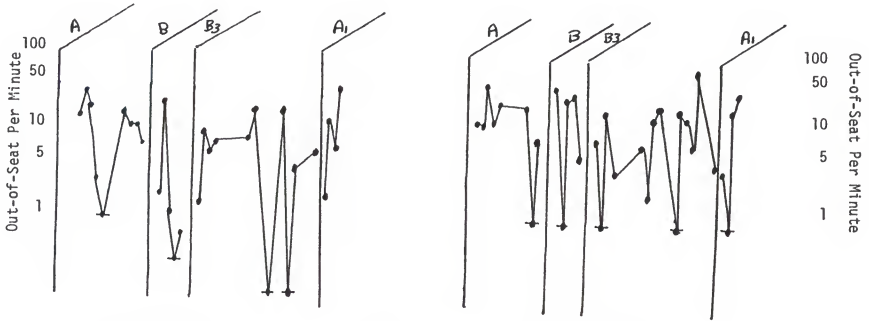


Figure 8

Charted Out-of-Seat Behavior Levels:
Subject C

In Observation 2, baseline levels (A) of off-task behavior again appear rather stable. In Phase B behavior levels seem erratic and a trend is difficult to interpret. In the treatment phase (B_3), off-task behaviors appear to begin at a rather low level in comparison to levels of behavior in Phases A and B, but gradually increases throughout the phase. Behavior levels in Phase A_1 are again erratic and difficult to interpret.

Figure 8 displays levels of out-of-seat behavior for both observation periods. As can be seen, daily levels of out-of-seat behavior for Subject C vary a great deal within phases of both observation periods. Due to this inconsistency between daily behavior levels, patterns and/or general slopes or trends are difficult to determine.

Mean analysis. Mean levels of off-task and out-of-seat durations were obtained in all experimental phases (A, B, B_3, A_1) for both observation periods (1, 2) and are depicted in Table 8. Subject C demonstrated higher levels of off-task behaviors in Phase B than in Phase A for Observation 1. Off-task behavior levels then decreased in the treatment phase (B_3), and increased again during the second baseline phase. In Observation 2, the same pattern developed except that behavior levels decreased even further in the second baseline phase (A_1).

Out-of-seat behavior levels for Observation 1 decreased during Phase B, decreased further in the treatment phase (B_3), and increased to above the novelty condition level in the second baseline phase. For Observation 2, out-of-seat behaviors increased in the novelty phase (B), then decreased to below levels in Phase A.

After removal of treatment (A_1) Subject C displayed levels of out-of-seat behavior slightly higher than during the treatment condition.

Table 8

Mean Levels Within Phases:
Subject C

Condition	Observation 1	Observation 2
Baseline (A)		
Off-Task	181.22	207.88
Out-of-Seat	93.44	82.13
Novelty (B)		
Off-Task	217.20	263.60
Out-of-Seat	71.80	126.40
Treatment (B_3)		
Off-Task	161.42	236.43
Out-of-Seat	51.17	78.64
Baseline (A_1)		
Off-Task	306.50	214.25
Out-of-Seat	84.25	79.50

Percent change. Significant (≥ 10 percent) and marked (≥ 20 percent) changes across various phases of the investigation (AB, BB_3, AB_3, BA, AA_1, and B_3A_1) for Subject C are presented in Table 9. During Observation Period 1, all changes across selected phases were found to be significant changes except out-of-seat for AA_1. Although off-task behaviors increased significantly (17 percent) from A to B, behaviors decreased markedly (26 percent) from B to B_3. Despite the elevated levels of off-task behavior during the novelty phase, treatment levels (B_3) decreased significantly from the baseline condition (A). After removal of the treatment condition (Phase A_1), off-task behavior levels increased markedly (29 percent) over the novelty phase. For Observation 1 out-of-seat levels decreased markedly from Phase A to Phase B, as opposed to a significant increase in off-task levels. Out-of-seat levels decreased even further (29 percent) from Phase B to the treatment (B_3). The combined effect of decrease in behavior from baseline to novelty and novelty to treatment is demonstrated in a marked (45 percent) decrease in out-of-seat behaviors for Observation 1. Behavior levels were then found to increase significantly from Phases B to A_1.

For the second observation period both off-task and out-of-seat behavior levels increased markedly upon introduction of the novelty tapes. From the novelty to treatment phases (BB_3) off-task behaviors decreased significantly (10 percent) and out-of-seat behaviors decreased markedly (38 percent). Due to the inflated levels during the novelty phase, the decrease of out-of-seat behaviors during the treatment phase returned levels to baseline

Table 9

Levels of Significant Change:
Subject C

Dependent Variables	Percent Change Across Phases					
	AB	BB_3	AB_3	BA_1	AA_1	B_3A_1
Observation 1						
Off-Task	+16.56*	-25.68**	-10.93*	+29.14**	+40.87**	+47.33**
Out-of-Seat	-23.16**	-28.73**	-45.24**	+14.78*	- 9.84	+33.26**
Observation 2						
Off-Task	+21.14**	-10.31*	+12.08*	-18.72*	+ 2.97	- 9.38
Out-of-Seat	+35.02**	-37.79**	- 4.25	-37.10**	- 3.20	+ 1.08

* represents ≥ 10 percent change from the condition which was measured.

** represents ≥ 20 percent change from the condition which was measured.

+ represents an increase across phases.

- represents a decrease across phases.

(i.e., no significant change for AB_3). The treatment effect on off-task behavior, however, was not great enough to return levels to baseline (+ 12 percent). Behavior levels of off-task and out-of-seat behaviors for Observation 2 then decreased significantly and markedly, respectively, from novelty conditions (B) to the second baseline condition (A_1).

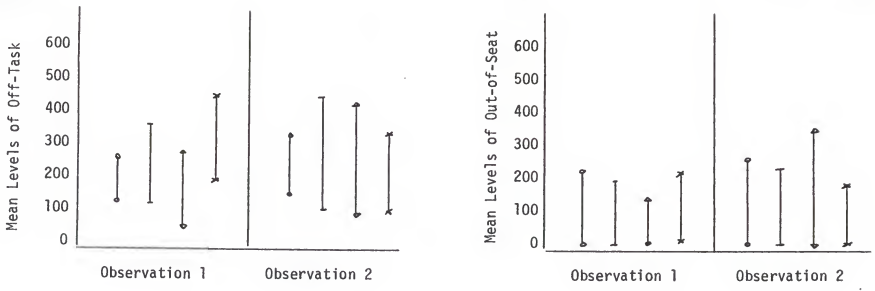
Range of variability. The range of behaviors exhibited by Subject C within each phase of the study is presented below.

Range Within Phases (Min.-Max.): Subject C

	A	B	B_3	A_1
Observation 1				
Off-Task	118-255	108-377	61-277	198-427
Out-of-Seat	0-203	0-171	0-138	13-214
Observation 2				
Off-Task	143-301	108-456	94-420	97-336
Out-of-Seat	0-246	0-227	0-344	0-194

A graphic display of the amount of overlap in measures across experimental phases was chosen for dissemination of this information. Figure 9 presents graphically the ranges and overlap for each behavior demonstrated by Subject C for both observation periods.

Figure 9 indicates that for Subject C there was overlap in all the ranges of both behaviors for every observation period. Off-task behaviors were at their lowest for both observation periods during the treatment phases of the experiment. Off-task behaviors were at their highest in Phase A_1 for Observation 1 and



Key

= Baseline (A)

= Novelty (B)

= Treatment (B_3)

= Second Baseline (A_1)

Figure 9

Ranges of Variability: Subject C

Phase B for Observation 2. Out-of-seat behaviors reached the record floor (i.e., 0) during all phases of the experiment and for both observation periods, except for a floor of 13 in Phase A_1 of Observation 1.

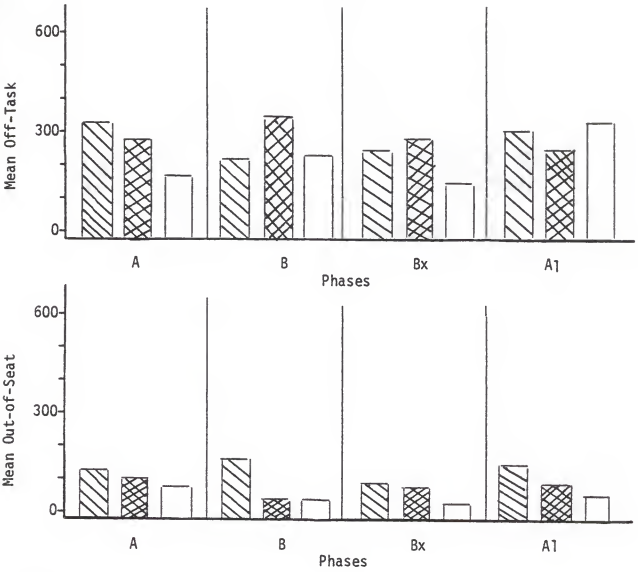
For Observation 1 the range of variability was smaller in the treatment condition than any other condition. The range decreased upon introduction of the novelty condition and increased again in the second baseline (A_1). For Observation 2 the range was greatest during the treatment phase and was least in Phase A_1.

Subject Comparison

Mean levels of off-task and out-of-seat behaviors for each phase of Observation 1 are represented for each subject in Figure 10. During the baseline condition in Observation 1 Subject A exhibited higher levels of both behaviors than Subjects B and C. Subject B exhibited higher levels of both behaviors than did Subject C. Moreover, Subject A was found to exhibit higher levels of out-of-seat behavior than Subjects B and C across all phases of the experiment. Additionally, Subject B exhibited out-of-seat behaviors at higher levels across all phases than did Subject C.

Subject B was found to exhibit greater levels of off-task behavior than either Subject A or C during the novelty and treatment phases. Only in Phase A1 did Subject C exceed the levels of behavior demonstrated by Subjects A or B.

Mean levels of off-task and out-of-seat behaviors for each phase of Observation 2 are represented for each subject in



Key

= Subject A

= Subject B

= Subject C

Figure 10

Subject Comparison: Observation 1

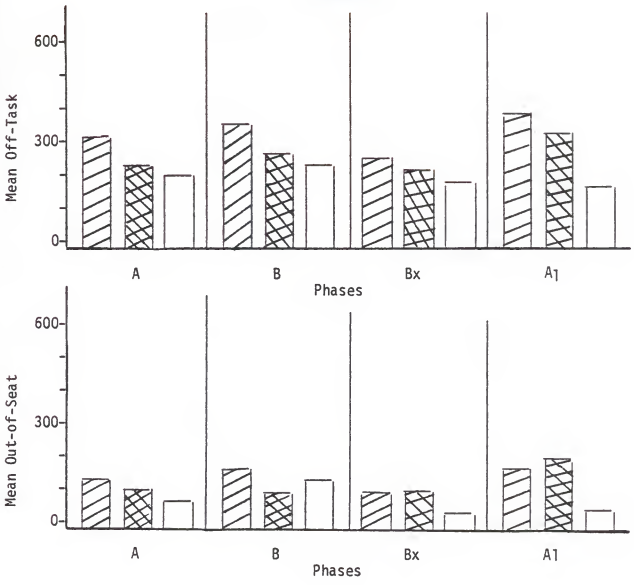
Figure 11. As was true in Observation 1, Subject A exhibited higher levels of off-task and out-of-seat behaviors than did Subjects B or C during the baseline phase. Again, as in Observation 1, Subject B exhibited higher levels of both behaviors than did Subject C in Baseline A.

In Observation 2 Subject A was found to exhibit consistent off-task behavior, more so than Subjects B or C for all phases of the experiment. During the treatment phase Subject B exhibited the lowest level of off-task behavior. Subject B also exhibited the lowest levels of out-of-seat behavior for the three subjects in Phase B, but demonstrated the highest level of out-of-seat behavior of the three during the treatment (Bx) and second baseline (A_1) conditions.

Summary

In summary, although the subjects involved in this study revealed varying levels of selected inappropriate behaviors, significant treatment effects, i.e., a decrease in behavior $\geq$ 10 percent across the BBx phases, were found for all subjects. The particular effects, however, varied for each subject.

A significant treatment effect was found for Subjects' A and C off-task and out-of seat behaviors for both observation periods. Thus, it appears that during treatment conditions (BBx) off-task behavior levels were significantly lower for all three subjects and out-of-seat behavior levels were significantly lower for two of the three subjects.



Key

= Subject A

= Subject B

= Subject C

Figure 11

Subject Comparison: Observation 2

The most dramatic treatment effects appear to occur for Subjects A and C, the two males. The treatment effects for Subject B appear dramatic on off-task behavior; however, treatment effects on out-of-seat behavior are less impressive.

CHAPTER V

DISCUSSION

Recent literature has indicated an increase in the interest and experimentation with relaxation training in educational settings. Few investigators, however, have studied the effectiveness of relaxation training with emotionally disturbed children. Additionally, relaxation training research has employed a variety of relaxation techniques, including cue-controlling, visual imagery, systematic desensitization, and progressive relaxation.

The present study employed the use of Jacobson's Progressive Relaxation techniques alone to clarify further the variables that are involved in an effective relaxation training curriculum. Changes in off-task and out-of-seat durations for three elementary school aged, emotionally handicapped children exposed to a variety of training session lengths (1, 2, 3 weeks) were examined. The relaxation training curriculum involved the daily listening to relaxation training (RT) cassette tapes through headsets in the classroom setting. These tapes were made by the investigator and were approximately 10 minutes in length.

Findings

The findings of this study are discussed relative to the experimental questions. The questions are listed and a brief discussion follows.

1. Does a brief relaxation training curriculum effect the duration of off-task behavior of emotionally handicapped children immediately following training sessions (Observation 1) and/or 30 minutes following treatment (Observation 2)?

Data from Table 5 indicate that for Subject A, receiving a one week RT program, off-task behavior decreased significantly between the novelty and treatment phases (treatment effect, BBx) during both observation periods. Although significant novelty effects were found during Observation 1 (-14 percent), a marked decrease was found between baseline (A) and treatment (B_1) conditions (-27 percent). To further substantiate a significant treatment effect on off-task behavior for Subject A, a significant (-17 percent) treatment effect was found during Observation 2, although no significant change was noted in the novelty conditions. Additionally, a marked (27 percent) decrease in off-task behavior was found between Baseline (A) and treatment conditions. Although significant changes have been noted, a visual inspection of charted data (Figure 1) indicates that daily off-task behavior levels were not on the decline toward the conclusion of the treatment conditions. An inspection of the ranges of variability for Subject A (see Figure 3) indicates that the range of off-task behaviors does not appear to be smaller than during other phases of the investigation.

However, the maximum and minimum levels of off-task behavior in the treatment condition are less than the maximum and minimum values found during the other phases of the investigation for both observation periods.

Data from Table 7 indicate that for Subject B, receiving a two week RT program, off-task behaviors decreased markedly (21 percent) for Observation 1 and significantly (11 percent) for Observation 2 during treatment conditions. As was true for Subject A, significant novelty effects were found in Observation 1 and were not found in Observation 2. In Observation 1 there was a significant (14 percent) increase in off-task behavior upon introduction of the novelty effects. Upon introduction of treatment conditions off-task behavior decreased markedly (21 percent), however, the decrease was not enough for a significant decrease from Baseline A conditions.

A visual inspection of graphed daily off-task behavior levels (see Figure 4) indicates that during the treatment conditions Subject B demonstrated a decline in behavior levels toward the end of the treatment conditions for both observation periods. However, in Observation 1 off-task behavior levels increased in Days 4, 5, 6, and 7 of the treatment phase. In Observation 2 behavior levels appear to generally slope downward throughout the treatment phase. As was the case for Subject A, maximum off-task behavior levels for Subject B were at their lowest during the treatment phase of the experiment for both observation periods (see Figure 6). Also, in Observation 2, Subject B demonstrated the lowest minimum value (i.e., 106) during the treatment phase of the investigation.

Data from Table 9 indicate that for Subject C, receiving a three week RT program, off-task behaviors during novelty conditions increased significantly for Observation 1 and markedly for Observation 2. However, it appears that during treatment conditions, off-task behavior levels decreased significantly from the novelty conditions. In Observation 1, although off-task behavior levels were elevated during novelty conditions, behavior levels in the treatment conditions decreased to a level significantly below Baseline A conditions. In Observation 2, although treatment conditions for Subject C reduced significantly the elevated levels of behavior during novelty conditions, the decreased level was still significantly higher than the baseline (A) conditions.

A visual inspection of graphed daily off-task behavior levels (see Figure 7) indicates a slight declining trend toward the end of the treatment phase in Observation 1. The opposite is true during Observation 2 where behavior levels appear to be generally on an upward trend throughout the treatment conditions.

As can be seen in Figure 9, the lowest level of off-task behavior for Subject C in both observation periods was found during the treatment phase (i.e., 61 and 94), however, during both observation periods the lowest maximum values were found during Phase A. Additionally, the range of off-task behaviors for Subject C appeared to be less in the Baseline (A) phase than in any other phase of the investigation.

In summary, off-task behaviors decreased at least significantly from novelty to treatment conditions (treatment effect, BBx) for all

three subjects and for both observation periods. Interpretation of the treatment effect should also include the apparent impact of the novelty conditions. Although differential novelty conditions did appear which affected off-task behavior levels significantly, in every case behavior levels in treatment conditions were reduced significantly from levels produced during novelty conditions. It then appears that for all three subjects, the RT program provided significantly (≥ 10 percent) reduced off-task behavior levels. However, the treatment effect appears to be greater for Subject A than for Subjects B and C.

Although behaviors appeared generally to be on the decrease in the treatment condition, off-task behavior levels for Subject C in the second observation period appear to be increasing throughout the treatment phase. For Subjects A and B off-task behavior levels appear to be decreasing toward the end of the treatment phases for both observation periods.

2. Does a brief relaxation training curriculum effect the duration of out-of-seat behavior of emotionally handicapped children immediately following training sessions (Observation 1) and/or 30 minutes following treatment conditions (Observation 2)?

Data from Table 5 indicate that for Subject A out-of-seat behaviors decreased markedly (≥ 10 percent) for both observation periods between the novelty and treatment conditions (treatment effect, BBx). For Observation 1 novelty conditions increased behavior levels significantly, however, treatment conditions reduced these elevated novelty condition levels markedly (24 percent). No significant novelty effects were found in Observation 2, but

behaviors decreased markedly in treatment conditions from Baseline A conditions.

Data from Table 7 indicate that for Subject B out-of-seat behaviors were not found to be reduced significantly during treatment conditions for either observation period. Data from Table 9 indicate that for Subject C out-of-seat behavior levels were reduced markedly from novelty to treatment conditions (treatment effect, BBx). Again, novelty conditions differentially effected behavior levels of Baseline A conditions. However, despite a decrease (Observation 1) or an increase (Observation 2) during novelty conditions, out-of-seat behavior levels of Subject C reduced markedly from novelty to treatment conditions. Visual inspection of out-of-seat behavior is not discussed here due to the wide variability of scores. This wide range of exhibited behaviors by all three subjects makes interpretation of the data difficult.

Ranges of variability for the three subjects, however, are included in the discussion of findings. During the first observation period, maximum levels of out-of-seat behavior for all three subjects were lowest during the treatment phase. Also, for this same observation period all three subjects reached the record floor (i.e., 0) during the treatment phase. However, only for Subject A was the lowest maximum value in Observation 2 found in the treatment phase. The ranges of out-of-seat behavior for Subjects B and C, on the other hand, appear to be the greatest <u>during</u> the treatment phase of Observation 2.

In summary, in this investigation two of three subjects were found to exhibit out-of-seat behavior markedly (≥ 29 percent) less

than levels found in novelty conditions both immediately following RT (Observation 1) and 30 minutes following RT. It appears then that for two of the three subjects included in this investigation, the RT program provided markedly (≥ 20 percent) reduced out-of-seat behavior levels, despite differential novelty effects. Additionally, during the first observation period the ranges of out-of-seat behavior were smaller during the treatment phase than for the other phases of the investigation. However, in Observation 2, Subjects B and C demonstrated wide ranges of variability in out-of-seat levels during the treatment conditions.

3. To what extent are effects of relaxation training different for 1, 2, and 3 week training sessions?

As is indicated in Tables 5, 7, and 9, both off-task and out-of-seat behaviors appear to have decreased significantly (≥ 10 percent) upon introduction of the relaxation curriculum for 1, 2, and 3 week treatment sessions.

Figure 1 indicates that for Subject A off-task behavior levels begin relatively high upon introduction of RT before beginning a downward trend for Observation 1. The opposite was found during the second observation period, where off-task behavior levels immediately drop upon introduction of RT but are on an increase throughout the treatment condition. Figure 2 indicates that Subject B, during Observation 1, almost immediately exhibited decreases in off-task behavior levels upon introduction of RT. However, these levels of behavior increased after a few training sessions before returning to a downward trend. In Observation 2 behavior levels begin high and are on a decreasing trend throughout

the RT condition. As can be seen in Figure 3 off-task behavior levels for Subject B follow a similar trend to that of Subject C, i.e., behavior levels begin low, then rise rather abruptly before beginning a decreasing trend. During Observation 2 behavior levels begin low and increase throughout the RT curriculum.

In this study, although mean levels of inappropriate behaviors were reduced significantly from novelty levels for all training session lengths, it appears that relaxation training selectively effects individual behavior levels. Moreover, due to the differential effects of RT upon individuals in this study, it appears then that length of training is not an adequate measure of the effects of RT for this study as individuals appear to respond differentially to treatment.

4. Does a withdrawal of RT produce changes in behavior of emotionally handicapped children?

The effects of RT are considered in this investigation to generalize (i.e., maintain significantly reduced levels of inappropriate behaviors after removal of RT curriculum) within individuals if mean levels of inappropriate behavior across the given phases meet all of the following significant change criteria:

AA_1 is decreased $\geq$ 10 percent across phases.

BA_1 is decreased $\geq$ 10 percent across phases.

BxA_1 demonstrates no significant change or demonstrates a decrease across phases.

As indicated in Table 5, Subject A did not meet the given criteria for either Observation 1 or Observation 2 for both off-task

and out-of-seat behaviors. As indicated in Table 7 only off-task behavior for the first observation period met the above criteria demonstrating a generalizing effect of RT of off-task behavior for Subject B. As was the case for Subject A, criterion levels of the generalizing effect of RT were not met in any case for Subject C.

In summary, in only one incidence (i.e., Subject B, Observation 1, off-task behavior) did the effects of RT appear to generalize during second baseline conditions after removal of treatment conditions. In all other cases the given criteria were not met, in fact, in many cases behavior levels increased markedly (≥ 20 percent) after removal of the relaxation curriculum, suggesting the immediate effects of RT and emphasizing the treatment effect. It appears then that RT may generalize after removal of the condition, however, in this investigation it was the exception rather than the rule.

5. To what extent are the effects of withdrawl of RT different for 1, 2, and 3 weeks of training?

As was indicated in Question 4, only in one case (i.e., Subject B, off-task behaviors for Observation 1) was a generalizing effect found. Thus, the extent to which 1, 2, or 3 weeks of relaxation training differ upon withdrawal of RT is difficult to determine. However, it may be said that the extent to which length of training has upon behaviors after removal of RT appears to be selectively differential across subjects.

Interpretation of Findings

These data allow several interpretations of the findings. However, two areas deserve explanation to aid in interpreting the

findings. The matter of a significant or marked change is of importance. Certainly levels of practical significance vary across individuals and situations; however, the determined level of significant change was pre-experimentally established. Additionally, as a result of frequent changes exceeding 20 percent, a category of Marked Change ($\geq$ 20 percent) was introduced to recognize further the extent of change across phases of the experiment. An interpretation of these data should include a knowledge of the criteria established for significant change.

Second, as was previously stated, an interpretation of these data should also include a consideration of novelty effects found in this investigation. The novelty or innovative nature of the treatment, i.e., the use of individual cassette tapes and individual headsets (different from the instruction subjects normally received), appears to have affected the behavior levels of the subjects in many instances. These effects, however, are prevalent in situations where new and innovative experimental programs have been inaugurated (Huck, Cormier, & Bounds, 1978). In an attempt to control novelty effects in this experiment, a treatment effect involves significant change from the novelty to treatment conditions.

Given the above considerations these data allow several interpretations of the findings and six general conclusions. First, the introduction of a RT program involving only Jacobson's techniques resulted in a mean decrease in off-task duration for all three subjects. In addition to exceeding significance levels in every case, the return of behavior levels to levels comparable

to baseline or novelty conditions after removal of treatment argues for a noticeable treatment effect. However, a complete interpretation of obtained data should include the ranges of behavior within phases. For Subject A maximum and minimum values of off-task behavior were at their lowest (indicating low levels of inappropriate behavior) during the treatment phase of the investigation. Although the ranges of off-task behavior were not at their lowest in all cases for Subjects B and C, Subject B demonstrated a possible decline in behavior levels toward the end of the treatment phase for both observation periods. Upon visual examination of data for Subject C, behavior levels are on the decrease toward the end of the treatment phase in Observation 1. However, in Observation 2 behavior levels appear to be increasing during the treatment phase.

Thus, percent change, a visual inspection of data, and an inspection of ranges, argues for a noticeable treatment effect for Subjects A and B. Also, the above information argues for a substantial treatment effect for Subject C during Observation 1. However, during the second observation period, although significant percent change in off-task behavior during treatment conditions is indicated (-10.31 percent), a visual inspection of charted data as well as an inspection of the ranges argues for no treatment effect.

Second, the introduction of the Jacobson RT program resulted in a decrease in out-of-seat behavior for two of the three subjects of this study. For these two subjects, Marked ($\geq$ 20 percent) decreases in out-of-seat behavior were found during treatment conditions for both observation periods. An inspection of the ranges

of variability of out-of-seat behavior during the phases of the investigation argue for a noticeable treatment effect in Observation 1 for all three subjects. However, ranges identified in the second observation period for Subjects B and C argue for less of a treatment effect.

Third, in every instance but one where a significant decrease in inappropriate behaviors was indicated in treatment conditions during Observation 1, a significant change was indicated in Observation 2. These results argue for an extended effect of RT beyond the immediate effects for two of the three subjects. These data indicated only a treatment effect up to 30 minutes after training. The further extent of this effect may be involved in future research in this area.

Fourth, although a determination of the differential effects of length of training (e.g., 1, 2, 3 weeks) was not clearly established as a result of this investigation, an inspection of charted data indicates a decreasing trend of inappropriate behaviors in several cases toward the end of the treatment condition. Although it is impossible to predict behavior levels as a result of four weeks of RT, for example, perhaps behavior levels will decrease even further. Braud (1978) suggests in excess of six weeks RT; however, extended usage of RT may be impractical for classroom use.

Fifth, in all but one instance, reduced behavior levels during treatment conditions were not maintained after removal of RT. These data form the basis of the fifth major conclusion. Although these data indicate possible generalizing effects, it is possible

that extended (in excess of three weeks) relaxation training may produce additional generalizing effects.

Finally, the sixth conclusion that may be drawn from these data refers to the core of any research that may be attempted in this area. Because there was a differential sensitivity in the dependent measure (e.g., no treatment effect for Subject B, out-of-seat behavior) one may assume that there are certain classes of behaviors for selected individuals that are effected by Jacobson RT while other classes of behavior may not be effected.

Problems and Limitations of the Study

There were at least four problems that appeared during the course of the study that deserve mentioning. While it is felt that none of these problems present a serious threat to the reliability of the data, the reader should be aware of these problems.

As was previously stated, the first problem involves the arbitrary selection of significant change criteria. Although data analysis procedures may be questioned by some, the reader must judge the suitability of procedures chosen. Moreover, a reader or researcher may inspect the data directly and relate them to past experience with similar data and similar procedures. In either case, the judgments required are highly qualitative and rules cannot always be stated profitably (Baer, Wolf, & Risley, 1968). Thus, various readers may differ in their individual opinions of what amount of change represents a meaningful change. However, criterion levels were established before the actual experimentation and were

considered substantial as an indication of meaningful or significant change. Criterion levels of significant change were established arbitrarily by the investigator. These levels were considered substantial in reference to daily classroom behavior levels.

The second problem was obvious in the case of Subject B, but not readily apparent for Subject A or C. All three subjects attended the same elementary school, however, extraneous events which happened at home or at school could not be fully controlled. Parents, teachers, and observers were instructed to provide the investigator any information on events which may affect each student's behavior. For Subject B, and only on one instance (the fourth day's data, B_2 phase), did observers, parents, and teacher provide any information. On this particular day, Subject B failed a spelling test in a previous class and was vocal of her displeasure. In no other case was information given which might explain extreme behavior levels, however, this does not exclude the possibility of further events which may have helped to explain obtained data.

The third problem encountered in the course of this study involves not only school policy but also absenteeism. All three subjects were absent for at least one day during treatment conditions, effecting the possibility of treatment given on consecutive days. Additionally, school policy and scheduling problems in at least one case for both Subjects B and C effected a consecutive school day treatment program. The specific problems were a result of school assemblies and a school field day. Although

these incidents did affect the consecutiveness of training, they are probably representative of the educational milieu which was the setting of the study.

The fourth problem encountered in this study involved the apparent novelty effects which may be attributable to a disruption of normal classroom routine and/or the introduction of cassette tapes. Similar past studies have failed to recognize novelty effects at all (Bhatura, Arnold, Lorance, & Gupta, 1979; Braud, 1978; Braud, Lupin, & Braud, 1975; Walton, 1980). In this study, however, novelty conditions immediately preceded treatment conditions and immediately followed the initial baseline conditions. As a result of the obvious effects, further novelty control should be recommended for future research. Novelty conditions may be lengthened and/or placed before and after treatment conditions to further clarify novelty effects.

Practical Implications

Several outcomes in this study may have practical implications for those involved in research or applied work in this area. The first implications are pertinent to practitioners in a wide variety of fields of study. For the first time there is empirical evidence that teacher-made taped recordings of Jacobson's RT curriculum alone may be helpful in reducing levels of inappropriate behaviors of emotionally handicapped children within the school environment. These findings may lead to increased research in (a) the differential effects of the cumulative treatment effect of various other methods (e.g., visual imagery, cue-controlling) with

Jacobson's RT curriculum and (b) the effects of Jacobson's RT on other subpopulations (e.g., learning disabled, hyperactive children, adolescents) or other behaviors (e.g., physical aggression, academic behaviors).

The second implications are pertinent to practitioners working in classrooms which include emotionally disturbed children. As a result of these findings, it may be that teachers can use RT tapes as a classroom tool to decrease levels of off-task and out-of-seat behaviors of some emotionally disturbed children. This is not to say that it will in fact be effective, but rather the data indicate selective effectiveness. At this point, however, not enough is known of the variables which produce these selective effects to predict for which children relaxation training will be effective.

Third, the implications of using objective descriptors of behavior are apparent. These are certain behaviors and behavioral measures (e.g., frequency of out-of-seat behavior) that are perhaps not sufficiently sensitive to establish either the presence of a treatment effect or a functional relationship. It would seem that these findings should prompt the practitioner to give serious consideration to the behavioral repertoire that will be monitored during an investigation of this nature. Additionally, the measures chosen to accumulate data, and the number of behaviors that will be monitored should be considered.

Suggestions for Future Research

This study raises a variety of questions related to RT research. Further research is needed before one can fully understand the effects of a relaxation training curriculum on individual behaviors.

The first requirement for any science is that of replication, for it is the soundest empirical test of reliability (Sidman, 1960). Sidman has discussed two types of replication. Direct replication, wherein no major experimental variables are changed, is always impossible to obtain in applied settings. Systematic replication, wherein the experimental variables are changed in a systematic manner, provides much opportunity for obtaining a better understanding of relaxation training and related performances. The following list presents some of the variables that should be investigated for further research.

1. As was previously stated, differential application of novelty controls may be advisable for future research to determine more clearly the novelty and disruptive effects of a taped RT program. Novelty conditions should be employed prior to and following treatment conditions as well to help clarify the treatment effect. The variation in novelty conditions is suggested to further delineate treatment and novelty effects.

2. For a more complete understanding of the generalizing effects of the present study, replications with children presenting various behavioral repertoires should be investigated. Moreoever, subjects should be selected with different ages to investigate the

possibility of a differential treatment effect at different ages. Also, an investigation of the differential treatment effects based on sex differences is warranted.

3. The longest length of training in the present study was three weeks. Braud (1978) suggests a 10-12 week period training, however, these extended lengths of training may be impractical for many practitioners. Future researchers should investigate the effects of training lengths in order to ascertain appropriate classroom applications.

4. In the present study the generalizing effects of RT upon individuals (i.e., did the effects of RT continue upon withdrawal of RT) were equivocal. Further studies of a similar nature should investigate the relationship between length and type of training on generalization for individuals.

5. The present study incorporated only the Jacobson (1948) technique of breathing and muscle relaxation. A variety of other investigators (Evans, 1976; French & Tupin, 1973; Wolpe, 1958) have used a combination of techniques. Further studies of a similar nature should concentrate on the relative effectiveness of the addition of particular techniques, such as cue-controlling and visual imagery, to the basic Jacobson RT curriculum.

6. Due to the wide ranges of behavior levels exhibited by the individuals in this investigation, further studies should examine the possibility of using variance or standard deviation within phases to aid in interpreting the obtained data.

By performing replications of the present experiment and by pursuing the suggested research, the knowledge base associated with relaxation training research can be expanded. Ultimately, relaxation training may be found to be a useful tool for use in a variety of classroom situations.

APPENDIX A

JACOBSON RELAXATION TRAINING CURRICULUM

1. Have client take a comfortable position with eyes closed.
2. Begin session by having client sit quietly for a few minutes.
3. Deep breathing
   a. Inhale to count of 4
   b. Hold to count of 8
   c. Exhale to count of 4
4. Systematic tightening and relaxing muscle groups.
   a. Left and right (L,R) forearms
   b. L,R upper arms
   c. L,R calf muscles
   d. L,R thighs
   e. Buttock muscles
   f. Abdomen
   g. Back
   h. Chest
   i. Neck
   j. Forehead
   k. Eyelids
5. Continue deep breathing.

(Jacobson, 1978)

APPENDIX B

DESCRIPTION OF SUBJECTS

Subject A is a 9½ year old black male in the fourth grade who demonstrated a history of hyperactive behaviors. Subject A attended the special education resource room for approximately three hours per school day. During the remainder of the school day he attended "regular" education classes.

Subject B is a nine year old white female in the fourth grade who attended a public school elementary resource room for the emotionally handicapped. Subject B has lens corrected visual difficulties. She attended the resource room for the emotionally handicapped approximately two hours per school day. The remainder of the school day, Subject B attended "regular" education classes.

Subject C is a 10½ year old white male in the fourth grade who attended a public school elementary resource room for the emotionally handicapped. Psychostimulant medication was previously prescribed as a treatment approach for his hyperactive behavior. Ritalin, at a rather consistent dosage, was used as a treatment approach three months before and continued throughout

the investigation. Subject C attended the special education resource room for approximately two hours per school day. The remainder of the school day he attended "regular" education classes.

APPENDIX C

TAPE NARRATIVES

Tape 1 Narrative

I want you to sit. Put your feet flat on the floor--let your shoulders relax--close your eyes and don't open them until I tell you. Okay, we are going to breathe in very deeply--I want you to fill up your chest and stomach with air. As I count to four, breathe in slowly. I will then count to eight and you will hold your breath. Then I will count to four as you slowly let out the air so that when I get to four you will have no more air left.

Let's try it. Breathe in slowly 1-2-3-4, now hold, 1-2-3-4-5-6-7-8. And breathe out 1-2-3-4. That's it. Let's do it again (repeat). And one more time (repeat).

Now sit still with your eyes closed and listen to me. We are going to tighten and loosen parts of your body and when we are finished you will feel warm and cozy and you will get very relaxed this way.

First I want you to hold your arms straight out in front of you. Keep your arms very straight and squeeze your hands--make

a fist and squeeze your hands very tight. Remember to keep your arms very straight. When I say "start" squeeze your fist hard. Okay, start, tighter, hold them together, good. Now slowly let your arms drop limp in your lap and relax. Good.

Now I want you to think about your legs and feet and think only of that. I want you to push your feet as hard as you can against the floor. Push very hard so that your knees feel tired and shakey. Okay, push hard. That's good. Now slowly stop the pressure and let your legs go limp. Good. Now think of your arms. Are they relaxed? If not, let them drop. Now your legs. Are they tight? Let them go limp.

Now think of your stomach. We are going to squeeze our stomachs very tight. Try making your stomach as hard as a rock--hold it--tighten up your stomach--Good--And now relax your stomach slowly. Good!

Now I want you to pretend you are a turtle and when I tell you I want you to pull your head tightly into your shell. Pull your head down and your shoulders up. Good. And now loosen up and slowly let your head come out of the turtle shell.

Now I want you to tighten up your face. Squeeze your eyes and wrinkle up your face very tight. I will count to five and you will hold it. Okay, squeeze and wrinkle very tight. 1-2-3-4-5. Good. And now slowly relax your face.

Just sit quietly for a few seconds now and breathe deeply and let your whole body relax. Good. Now I will count to three and on three open your eyes. 1-2-3.

Tape 2 Narrative

Sit down and put your feet flat on the floor. Okay, now put your hands in your lap. Make sure they are comfortable.

Close your eyes and keep them closed until I tell you to open them later.

I want you to pretend you are a balloon. As I count to four breathe in and fill up the balloon but not too tight. Make sure you fill your tummy with air so it sticks out like Santa Claus. Now do this slowly while I count to four, then hold your breath while I count to six and then slowly breathe out as I count to four. Okay, now let's try it. Breathe in slowly 1-2-3-4 . . . hold it . . . 1-2-3-4-5-6 . . . slowly let it out now 1-2-3-4 . . . good and let your shoulders drop. You should feel warm, heavy, and relaxed. Now let's try it again. (Repeat.) And again. (Repeat.)

Now just relax and listen to me for a few minutes. In a little while we are going to make some of your muscles feel very tight and then very loose. We will do a few now so we can learn to relax. This will make you feel cozy and warm when we finish.

Okay, the first muscles we are going to tighten are your arms. Hold your arms straight out in front of you and pretend you have a soft rubber ball in each hand. While I count to five I want you to pretend to squeeze the ball as tightly as you can. Keep your elbows straight and squeeze tight. Okay squeeze 1-2-3-4-5 and now relax. Let your hands fall into a comfortable place in your lap. Breathe slowly and relax. Now we are going to tighten your legs. Pretend you are trying to push a hole in the floor with your feet. Push hard while I count to five . . . Okay push 1-2-3-4-5.

And now relax. Feel your legs tingle. This means you are getting relaxed.

Now we will pretend we are turtles. You are sitting on a log sunning yourself feeling good . . . when I begin to count to five I want you to pull your head into your shell and hold it. Okay, pull your head in tight 1-2-3-4-5 . . . now drop your shoulders and relax.

Now I want you to pretend that you are lying on your back and you see a baby elephant about to step on you. Tighten up your stomach so it feels like a rock. Make your stomach like a hard rock as I count to five . . . ready . . . go 1-2-3-4-5 . . . and now relax it . . . good.

One more thing and we'll be finished for today. Pretend a fly has landed on your nose and you can't move any part of your body except your face to make him go away. Wrinkle and squint up your face as tight as you can while I count to five . . . ready 1-2-3-4-5 . . . and now relax and drop your shoulders and breathe deeply.

Just sit quiet for a few seconds now and breathe deeply and let your whole body relax. Good, now I will count to three and on three open your eyes . . . 1-2-3.

Tape 3 Narrative

Hi. I want you to sit with your feet flat on the floor, your hands in your lap, your shoulders dropped and your eyes closed. Keep your eyes closed all the time until I tell you to open them. Okay, sit quietly and listen to me. The first thing we'll do today is fill our chest and tummy with air. We've done it before and you know how to do it. Breathe in as I count to four. Hold it to the count of eight and let it out again to the count of four. Let's begin . . . 1-2-3-4 . . . 1-2-3-4-5-6-7-8 . . . 1-2-3-4. (Repeat twice.)

Now sit quietly for a while with your eyes closed and listen to me. We are going to tighten your muscles again like we've done before. I'll tell you what to tighten and you tighten while I count to four. Then you will slowly relax the muscles you have tightened. By doing this you will feel very good and relaxed. First let's tighten our arms. Hold them both straight out in front of you and tighten . . . 1-2-3-4 . . . good . . . now relax slowly.

Now let's tighten your legs hard . . . ready . . . go . . . 1-2-3-4. Good! And now your stomach . . . go . . . 1-2-3-4. Good and relax your legs now. Now let's do your face . . . do a real good job on your face now . . . ready . . . go . . . 1-2-3-4. Good. (Repeat.)

Now I want you just to think about the parts of your body and when I mention them let them relax further. Don't tighten them any more, just let them relax. Okay, relax your arms, and your legs, and your stomach, and your face . . . and your whole body . . . Good. (Repeat.)

On the count of three you can open your eyes now . . .

Okay . . . 1-2-3.

APPENDIX D

RAW DATA

Off-Task

	Subject A		Subject B		Subject C	
Day	Obs. 1	Obs. 2	Obs. 1	Obs. 2	Obs. 1	Obs. 2
1	569	324	287	310	225	143
2	194	309	159	243	246	202
3	182	404	234	342	149	301
4	536	281	397	287	152	194
5	176	293	376	194	189	201
6	nd	nd	nd	nd	nd	nd
7	282	nd	263	nd	255	nd
8	258	256	300	378	118	189
9	183	301	248	133	127	154
10	397	315	362	263	200	279
11	368	327	400	362	377	169
12	210	199	508	305	144	283
13	283	430	63	337	253	456
14	437	382	284	318	108	302
15	285	339	441	106	204	108
16	315	263	139	314	61	261
17	361	188	254	261	143	142

	Subject A		Subject B		Subject C	
Day	Obs. 1	Obs. 2	Obs. 1	Obs. 2	Obs. 1	Obs. 2
18	108	318	166	209	192	173
19	282	254	391	405	193	94
20	nd	nd	nd	nd	nd	nd
21	265	364	382	289	nd	nd
22	nd	294	nd	186	nd	211
23	481	442	354	452	143	245
24	234	409	nd	nd	162	328
25	262	300	196	208	227	196
26			140	155	207	322
27			165	376	73	151
28			220	392	183	273
29			373	351	nd	420
30			157	294	76	305
31					286	241
32					315	97
33					198	183
34					427	336

_____ indicates a change in experimental conditions.

Out-of-Seat

	Subject A		Subject B		Subject C	
Day	Obs. 1	Obs. 2	Obs. 1	Obs. 2	Obs. 1	Obs. 2
1	321	201	125	89	110	89
2	85	145	284	180	203	84
3	125	128	52	156	150	246
4	128	206	35	202	20	89
5	0	92	42	84	0	149
6	nd	nd	nd	nd	nd	nd
7	212	nd	110	nd	131	nd
8	93	243	241	112	89	142
9	48	0	98	40	87	0
10	105	221	52	43	51	59
11	86	109	39	201	15	227
12	147	265	41	7	171	0
13	177	222	21	167	9	182
14	267	22	32	115	0	191
15	92	121	414	60	164	32
16	0	96	9	126	13	56
17	210	129	152	26	78	0
18	137	141	64	85	42	121
19	215	182	201	281	58	21
20	nd	nd	nd	nd	nd	nd
21	21	19	117	168	nd	nd
22	nd	104	nd	76	nd	48
23	90	129	0	106	65	12

	Subject A		Subject B		Subject C	
Day	Obs. 1	Obs. 2	Obs. 1	Obs. 2	Obs. 1	Obs. 2
24	163	315	nd	nd	15	128
25	112	98	82	115	0	0
26			116	48	135	116
27			34	233	0	93
28			31	193	27	41
29			297	107	nd	344
30			103	101	43	29
31					13	23
32					93	0
33					57	101
34					214	194

_____ indicates a change in experimental conditions.

APPENDIX E

OBSERVER RELIABILITY CHECKS

Behavior	Obs. 1	Obs. 2	Obs. 1	Obs. 2	Obs. 1	Obs. 2
	Investigator		Observer 1		Percentage Agreement	
Off-Task	75	83	76	82	98.68	98.80
Out-of-Seat	50	27	46	25	92.00	92.59
	Investigator		Observer 2		Percentage Agreement	
Off-Task	75	83	77	85	97.40	97.65
Out-of-Seat	50	27	48	26	96.00	96.29
	Observer 1		Observer 2		Percentage Agreement	
Off-Task	76	83	77	85	98.70	97.65
Out-of-Seat	50	27	48	26	96.00	96.30

Data based on two random five minute observation periods.

REFERENCES

Ayllon, T., Layman, D., & Kandel, H. A behavioral-educational alternative to drug control of hyperactive children. Journal of Applied Behavior Analysis, 1975, 8, 137-146.

Baer, D. M., Wolf, M. M., & Risley, T. R. Some current dimensions of applied behavior analysis. Journal of Applied Behavior Analysis, 1968, 1, 91-97.

Becker, W., Madsen, C., Arnold, C., & Thomas, D. The contingent use of teacher attention and praise in reducing classroom behavior problems. The Journal of Special Education, 1967, 1, 287-307.

Bergland, B. W., & Chal, A. H. Relaxation training and a junior high behavior problem. School Counselor, 1972, 19, 288-293.

Bhatura, V., Arnold, E., Lorance, T., & Gupta, D. Muscle relaxation therapy in hyperkinesis: Is it effective? Journal of Learning Disabilities, 1979, 12(3), 182-186.

Borg, W. R., & Gall, M. D. Educational research (3rd ed.). New York: Longman, 1979.

Braud, L. W. The effects of frontal EMG biofeedback and progressive relaxation upon hyperactivity and its behavior concomitants. Biofeedback and Self-Regulation, 1978, 3(1), 69-89.

Braud, L. W., Lupin, M. N., & Braud, W. G. The use of electromyographic biofeedback in the control of hyperactivity. Journal of Learning Disabilities, 1975, 8(7), 420-425.

Budzinski, T. H., & Stoyva, J. M. An instrument for producing deep muscle relaxation by means of analog information feedback. Journal of Applied Behavior Analysis, 1969, 2, 231-237.

Carter, J. L., & Synolds, D. Effects of relaxation training upon handwriting quality. Journal of Learning Disabilities, 1974, 7, 236-238.

Chang-Laing, R., & Denney, D. R. Applied relaxation as training in self-control. Journal of Counseling Psychology, 1976, 23, 183-189.

Csapo, M. Peer models reverse the "one bad apple spoils the whole barrel" theory. Teaching Exceptional Children, 1972, 5, 20-24.

Davidson, P. O., & Hiebert, S. F. Relaxation training, relaxation instruction, and repeated exposure to a stressor film. Journal of Abnormal Psychology, 1971, 72(2), 154-159.

Davison, G. C. Systematic desensitization as a counter-conditioning process. Journal of Abnormal Psychology, 1968, 73, 91-99.

Deffenbacher, J. L., & Payne, D. J. Two procedures for relaxation as self-control in the treatment of communication apprehension. Journal of Counseling Psychology, 1977, 24(3), 255-258.

Elitzur, B. Self-relaxation program for acting-out adolescents. Adolescense, 1976, 6(44), 569=572.

Emery, J. R. Systematic desensitization: Reducing test anxiety. In J. D. Krumboltz & C. E. Thoreson (Eds.), Behavioral counseling: Cases and techniques. New York: Holt, Rinehart & Winston, 1969.

Evans, E. C. Eclectic relaxation therapy. Medical Journal of Australia, 1976, 1, 149-151.

Folkins, C. H., Lawson, K. D., Opton, E. M., & Lazarus, R. S. Desensitization and the experimental reduction of threat. Journal of Abnormal Psychology, 1968, 73, 100-113.

French, A. P., & Tupin, J. P. Method of relaxation. Journal of the American Medical Association, 1973, 223(7), 801-802.

Gelder, M. G., & Marks, I. Severe agoraphobia: A controlled prospective trial of behavior therapy. British Journal of Psychiatry, 1966, 112, 309-319.

Goldfried, M. R., & Trier, C. S. Effectiveness of relaxation as an active coping skill. Journal of Abnormal Psychology, 1974, 83, 348-355.

Goodwin, S., & Mahoney, M. Modification of aggression through modeling: An experimental probe. Journal of Behavior Therapy and Experimental Psychology, 1975, 6, 200-202.

Hafner, J. L. Jacobson's physiological relaxation. Contemporary Education, 1968, 39, 152-155.

Hafner, J. L. Wolpe's method of systematic desensitization. Contemporary Education, 1968, 39,20-28.

Hallahan. D., & Kauffman, J. Introduction to learning disabilities: A psycho-behavioral approach. Englewood Cliffs, N.J.: Prentice-Hall, 1976.

Haring, N. G., & Whelan, R. Experimental methods in education and management. In N. J. Long, W. C. Morse, & R. G. Newman (Eds.), Conflict in the classroom. Belmont, Cal.: Wadsworth, 1965.

Harvey, J. R. The potential of relaxation training for the mentally retarded. Mental Retardation, 1979, 17(2), 71-76.

Hewett, F. M. The emotionally disturbed child in the classroom. Boston: Allyn & Bacon, 1968.

Huck, S. W., Cormier, W. H., & Bonds, W. G. Reading statistics and research. New York: Harper & Row, 1974.

Israel, E., & Beiman, I. Live versus recorded relaxation training: A controlled investigation. Behavior Therapy, 1977, 8, 251-254.

Jacobson, E. Progressive relaxation. Chicago: University of Chicago Press, 1938.

Jacobson, E. You must relax (3rd ed.). Chicago: Whittlesey House, 1948.

Jacobson, E. You must relax (5th ed.). New York: McGraw-Hill, 1978.

Kauffman, J. M. Characteristics of children's behavior disorders. Columbus: Charles E. Merrill, 1977.

Koeppen, A. S. Relaxation training for children. Elementary School Guidance and Counseling, 1974, 9, 14-21.

Kubaney, E., Weiss, L., & Sloggett, B. The good behavior clock: A reinforcement/time-out procedure for reducing disruptive classroom behavior. Journal of Behavior Therapy, 1971, 2, 173-179.

Laxer, R. M., Quarter, J., Kooman, A., & Walker, K. Systematic desensitization and relaxation of high-test-anxious secondary school students. Journal of Counseling Psychology, 1969, 16, 446-451.

Laxer, R. M., & Walker, K. Counterconditioning versus relaxation in the desensitization of test anxiety. Journal of Counseling Psychology, 1970, 17(5), 431-436.

Lowenstein, T. J. Biofeedback relaxation training via radio. Journal of College Student Personnel, 1978, 19, 372-373.

Lupin, M., Braud, L. W., Braud, W., & Duer, W. F. Children, parents, and relaxation tapes. Academic Therapy, 1976, 7(1), 105-113.

Marwit, S. J., & Stenner, A. J. Hyperkinesis: Delimination of two patterns. Exceptional Children, 1972, 38, 401-406.

Mathews, A. M., & Gelder, M. G. Psycho-physiological investigations of brief relaxation training. Journal of Psychomatic Research, 1969, 13, 1-12.

McKim, R. Relaxed attention. Journal of Creative Behavior, 1974, 8, 265-276.

McManus, M. Group desensitization of test-anxiety. Behavior Research and Therapy, 1971, 9, 51-56.

Mitchell, K. R., & Ng, K. T. Effects of group counseling and behavior therapy on the academic achievement of test-anxious students. Journal of Counseling Psychology, 1972, 19, 491-497.

Moore, N. Behavior therapy in bronchial asthma: A controlled study. Journal of Psychosomatic Research, 1965, 9, 257.

Paul, F. L. Physiological effects of relaxation training and hypnotic suggestion. Journal of Abnormal Psychology, 1969, 74, 425-437.

Pennypacker, H. S., Koenig, C. H., & Lindsley, O. R. Handbook of the standard behavior chart. Kansas City: Precision Media, 1972.

Pinsker, M. V. Learning while relaxing or sleeping. Education, 1971, 6, 51-53.

Rachman, S. Studies in desensitization: I. The separate effects of relaxation and desensitization. Behavior Research and Therapy, 1965, 6, 245-252.

Reinking, R. H., & Kohl, M. L. Effects of various forms of relaxation training on physiological and self-report measures on relaxation. Journal of Consulting and Clinical Psychology, 1975, 43(5), 595-600.

Repp, A. C., Deitz, D., Boles, S. M., Deitz, S. M., & Repp, C. F. Differences among common methods for calculating interobserver agreement. Journal of Applied Behavior Analysis, 1976, 9, 109-113.

Rose, T. An investigation of the functional relationship between food additives and hyperactivity (Doctoral dissertation, University of Florida, 1977). Dissertation Abstracts International, 1978, 38(11), 6653-A. (University Microfilms No. 7806747)

Rose, R. The functional relationship between artificial food colors and hyperactivity. Journal of Applied Behavior Analysis, 1978, 11, 439-446.

Russell, R. K., Wise, F., & Stratoudakis, J. P. Treatment of test-anxiety by cue-controlled relaxation and systematic desensitization. Journal of Counseling Psychology, 1976, 23(6), 563-566.

Schultz, J. H., & Luthe, W. Autogenic training. New York: Grune & Stratton, 1959.

Sidman, M. Tactics of scientific research: Evaluating experimental data in psychology. New York: Basic Books, 1960.

Simpson, D. D., & Nelson, A. E. Attention training through breathing control to modify hyperactivity. Journal of Learning Disabilities, 1974, 7, 274-283.

Stroufe, L. A. Drug treatment of children with behavior problems. In F. D. Horowitz (Ed.), Review of child development research (Vol. 4). Chicago: University of Chicago Press, 1975.

Walton, W. The use of relaxation curriculum and biofeedback training in the classrooms to reduce inappropriate behaviors of emotionally handicapped children. Behavioral Disorders, Winter, 1980.

Wolpe. J. Psychotherapy by reciprocal inhibition. Stanford: Stanford University Press, 1958.

Wolpe, J., & Lazarus, A. A. Behavior therapy techniques: A guide to the treatment of neurosis. Toronto: Pergamon Press, 1966.

Yorkston, N. J., & Sergeant, H. S. A simple method of relaxation. Lancet, 1969, 2, 1319-1321.

BIOGRAPHICAL SKETCH

Don Wells was born in 1951 at Hollywood, Florida, where he eventually graduated from South Broward High School in Hollywood. He then enrolled at Broward Community College to pursue a general Associate of Arts degree.

After graduating from Broward Community College in 1971, Mr. Wells attended the University of Florida from which he received his Bachelor of Arts degree in English education in 1973. In 1973, he began teaching English at Dunnellon High School. For two of the three years Mr. Wells was employed at Dunnellon High School he served as chairperson of the Language Arts Department.

In 1976, Mr. Wells entered graduate school at the University of Florida and, in 1977, completed the requirements for the Master of Education degree. His area of study was special education with an emphasis in emotional disturbance.

Mr. Wells then taught for another year in the Marion County Schools in Dunnellon, Florida. During this period he was a resource teacher for students diagnosed as having varying exceptionalities, i.e., emotionally disturbed, learning disabled, and mentally retarded adolescents.

In July, 1978, Mr. Wells began studies for the Doctor of Philosophy degree in special education with an emphasis in emotional

disturbance. Mr. Wells will complete the requirements for the degree of Doctor of Philosophy in August, 1980. He has accepted a position as an assistant professor in the Department of Behavioral Sciences at Louisiana Tech University in Ruston, Louisiana.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Cecil D. Mercer, Chairman
Professor of Special Education

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Stephen F. Olejnik
Assistant Professor of Foundations of Education

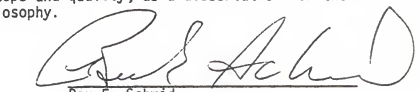
I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Cary L. Reichard
Associate Professor of Special Education

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

William R. Reid
Professor of Special Education

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Rex E. Schmid
Associate Professor of Special Education

This dissertation was submitted to the Graduate Faculty of the Department of Special Education in the College of Education and to the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August, 1980

Dean, Graduate School